Appendix A

NOI & NOA

acres of seasonal marsh and restore seven acres of riparian vegetation. In addition, the Service would open an additional 187 acres to free-roam hunting, 1,330 acres to hunting from 18 new designated blinds, and open the Refuge to hunting on Sundays (in addition to Wednesday and Saturday). Alternative B would also expand Kern Refuge's environmental education and interpretation programs and an outdoor recreation planner would be hired. Changes at Pixley Refuge under Alternative B would focus on improving and expanding the Refuge's existing threatened and endangered species management and environmental education and interpretation programs. The Service would pursue acquisition of the remaining natural lands within the Refuge's approved acquisition boundary and expand surveying and monitoring for special status species. The Service would also expand aerial surveys for waterfowl and restore five acres of riparian vegetation.

Under Alternative C (the proposed action), the management focus for Kern Refuge would change to providing wintering habitat for a variety of migratory birds and contributing to the recovery of targeted special status species. Under this alternative, the Service would rehabilitate 1,330 acres of seasonal marsh; expand aerial surveys of waterfowl and ground surveys of shorebirds, waterbirds, raptors, and special status species; strengthen levees to protect upland units from flooding; eradicate 90 percent of the salt cedar on the Refuge within 10 years; restore 440 acres of saltbush scrub; restore 15 acres of riparian vegetation; prepare a comprehensive surveying and monitoring plan for special status species; and prepare a grassland management plan. The Service would also expand Kern Refuge's hunt area and add nine new spaced blinds, expand the environmental education and interpretation programs substantially, construct a new tour route, and build two new photo blinds. Changes at Pixley Refuge under Alternative C would be similar to those under Alternative B. In addition, the Service would substantially expand its surveying, monitoring, and research program for threatened and endangered species and prepare a grassland management plan. The Refuge would also seek approval to prepare a land protection plan that explores options for providing linkages between Pixley Refuge units and State-owned habitat to the south. Alternative C would also include developing a 272-acre grain unit to provide foraging habitat for sandhill cranes, restoring 10 acres of riparian habitat, and expanding surveys for waterbirds and raptors. Pixley Refuge's environmental education and interpretation programs would be expanded and a new pullout and interpretive displays would be developed.

Changes under Alternative D at Kern and Pixley Refuges are similar to those described under Alternative C, with the following exceptions. The Service would substantially modify management of moist soil units at both Refuges to encourage native waterfowl food plants and improve habitat for shorebirds. In addition, the size of the hunt area at Kern Refuge would be reduced by about 38 percent and two new tour routes would be constructed. The Service would also restore more riparian habitat under Alternative D–30 acres at Kern Refuge and 20 acres at Pixley Refuge.

Public Comments

After the review and comment period ends for this Draft CCP/EA, comments will be analyzed by the Service and addressed in the Final CCP. All comments received from individuals, including names and addresses, become part of the official public record and may be released. Requests for such comments will be handled in accordance with the Freedom of Information Act, the Council on Environmental Quality's NEPA regulations and other Service and Departmental policies and procedures.

Dated: June 21, 2004.

David G. Paullin,

Manager, California/Nevada Operations, Sacramento, California.

[FR Doc. 04–14528 Filed 6–24–04; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

Preparation of an Environmental Impact Statement for Issuance of an Incidental Take Permit Associated With a Habitat Conservation Plan (HCP) for the Federally Endangered California Condor

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), the U.S. Fish and Wildlife Service (Service) advises the public that we intend to gather information necessary to prepare an Environmental Impact Statement (EIS) on the proposed habitat conservation plan (HCP) for the federally endangered California condor (*Gymnogyps californianus*) (Tejon Ranch Condor HCP). The proposed Tejon Ranch Condor HCP is being prepared under section 10(a)(1)(B) of the Endangered Species Act, as amended. The Tejon Ranch Corporation (Tejon Ranchcorp), located in Kern and Los Angeles Counties, California, intends to request a permit for the incidental take of the endangered California condor. The permit is needed to authorize the incidental take of this species as a result of implementing activities covered under the proposed HCP.

We provide this notice to: (1) Describe the proposed action and possible alternatives; (2) advise other Federal and State agencies, affected Tribes, and the public of our intent to prepare an EIS; (3) announce the initiation of a 30-day public scoping period; and (4) obtain suggestions and information on the scope of issues and alternatives to be included in the EIS.

DATES: Public meetings will be held on: Tuesday, July 13, 2004, from 3 p.m. to 5 p.m. and 7 p.m. to 9 p.m. Written comments should be received on or before July 26, 2004.

ADDRESSES: The public meetings will be held at Cuddy Hall, 335 Lakewood Place, Frazier Park, CA. Information, written comments, or questions related to the preparation of the EIS and the NEPA process should be submitted to Rick Farris, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California 93003; *fw1condorHCP@r1.fws.gov;* or fax (805) 644–1766.

FOR FURTHER INFORMATION CONTACT: Rick Farris at the above Ventura address, or at (805) 644–1766.

SUPPLEMENTARY INFORMATION:

Reasonable Accommodation

Persons needing reasonable accommodations in order to attend and participate in the public meeting should contact Jane Touth of the Ventura Fish and Wildlife Office at (805) 644–1766 as soon as possible. In order to allow sufficient time to process requests, please call no later than 1 week before the public meeting. Information regarding this proposed action is available in alternative formats upon request.

Background

Section 9 of the Endangered Species Act, as amended (Act) (16 U.S.C. 1531 *et seq.*) and Federal regulations prohibit the "take" of a fish or wildlife species

listed as endangered or threatened. Under the Act, the following activities are defined as take: harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect listed animal species, or attempt to engage in such conduct (16 U.S.C. 1538). However, under section 10(a) of the Act, we may issue permits to authorize "incidental take" of listed species. Incidental take is defined by the Act as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Regulations governing permits for threatened and endangered species, respectively, are at 50 CFR 13 and 50 CFR 17.

California Condor

The Tejon Ranchcorp is requesting a permit for incidental take of the California condor on lands included in the Tejon Ranch Condor HCP. The Tejon Ranch Condor HCP includes all lands within the boundaries of the Tejon Ranch that are owned by the Tejon Ranchcorp or its affiliates that lie outside the San Joaquin Valley floor area, and encompass approximately 340 square miles. For the purposes of the Tejon Ranch Condor HCP, the Ranch is divided into three major sections: the Antelope Valley Floor, the Tehachapi Mountain Uplands, and the Tunis and Winters Ridge Area. The Tunis and Winters Ridge Area is the area designated in the Tejon Ranch Condor HCP as the "Condor Study Area." The Tejon Ranch Condor HCP is designed principally to avoid the take of the California condor, but includes provisions to minimize and mitigate the impacts of any take that may occur.

Activities covered by the proposed Tejon Ranch Condor HCP (Covered Activities) include ranchwide activities, such as livestock grazing and range management, motion picture filming, construction and maintenance of all underground utilities including any oil, gas, water, or other pipelines and fiber optic cables; and recreational activities such as fishing, fishing-related construction, equestrian activities, bicycling events, boating, sailing, swimming, camping, hiking, four-wheel driving, bird watching, and other nature-based activities. Proposed Covered Activities that occur in the Antelope Valley Floor area include construction, maintenance, and operation of highway commercial facilities, general commercial facilities, heavy and light industrial facilities, antennae, high-tension power lines, resorts, indoor and outdoor entertainment and recreational facilities and parks, residential subdivisions, roads, and other infrastructure necessary to these activities. Proposed Covered Activities in the Condor Study Area include ranchwide activities and limited construction activities. Covered Activities that could occur in the Tehachapi Mountain Uplands include the possible future development of a recreational complex uphill of the Old Headquarters area of the Ranch. Low-density, low-profile residential and destination resort development in the Tejon Lake-Beartrap Area of the Ranch would occur in this area as well.

The Tejon Ranch Condor HCP describes how the effects of the Ranch's activities on the California condor will be minimized and mitigated through the implementation of take avoidance, minimization, mitigation, and monitoring measures. Under the proposed HCP, development on the Ranch over the proposed 50-year permit term, will occur in areas that are rarely used by the California condors and the development will be designed to maintain the value of areas used by California condors.

Environmental Impact Statement

The Tejon Ranchcorp and the Service have selected LSA Associates, Inc. to prepare the EIS. The document will be prepared in compliance with the National Environmental Policy Act (42 U.S.C. 4321, *et seq.*). The LSA Associates, Inc. will prepare the EIS under the supervision of the Service, who is responsible for the scope and content of the document.

The EIS will consider the proposed action, the issuance of a section 10(a)(1)(B) permit under the Act, and a reasonable range of alternatives. A detailed description of the impacts of the proposed action and each alternative will be included in the EIS. Several alternatives will be considered and analyzed, representing varying levels of conservation, impacts, and permit area configurations. A No Action alternative will be included in the analysis of the alternatives considered. The No Action alternative means that the Service would not issue a section 10(a)(1)(B) permit.

The EIS will also identify potentially significant direct, indirect, and cumulative impacts on biological resources, land use, air quality, water quality, water resources, economics, and other environmental issues that could occur with the implementation of the proposed actions and alternatives. For all potentially significant impacts, the EIS will identify avoidance, minimization, and mitigation measures to reduce these impacts, where feasible, to a level below significance.

Review of the EIS will be conducted in accordance with the requirements of the NEPA Council on the Environmental Quality Regulations (40 CFR 1500–1508), the Administrative Procedures Act, other applicable regulations, and the Service's procedures for compliance with those regulations. This notice is being furnished in accordance with 40 CFR 1501.7 of NEPA to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to be addressed in the EIS. The primary purpose of the scoping process is to identify important issues raised by the public, related to the proposed action. Written comments from interested parties are welcome to ensure that the full range of issues related to the permit request is identified. While written comments are encouraged, we will accept both written and oral comments at the public meetings. In addition, you may submit written comments by mail, e-mail, or facsimile transmission (*see* **ADDRESSES**). All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Dated: June 18, 2004.

Paul Henson,

Acting Deputy Manager, California/Nevada Operations Office, U.S. Fish and Wildlife Service.

[FR Doc. 04–14314 Filed 6–24–04; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

Final Determination Against Federal Acknowledgement of the Webster/Dudley Band Chaubunagungamaug Nipmuck Indians

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Notice of final determination.

SUMMARY: Pursuant to 25 CFR 83.10(m), notice is given that the Principal Deputy Assistant Secretary—Indian Affairs declines to acknowledge a group known as the Webster/Dudley Band of Chaubunagungamaug Nipmuck Indians, Petitioner 69B, c/o Mr. Edwin Morse, Sr., 265 West Main Street, P.O. Box 275, Dudley, Massachusetts 01501, as an Indian tribe within the meaning of Federal law. This notice is based on a final determination that the petitioning group does not satisfy all seven of the criteria set forth in Part 83 of Title 25 of the Code of Federal Regulations, specifically criteria 83.7(a), (b), and (c), and, therefore, the petitioner does not meet the requirements for a government-

STATE HOUSING FINANCE AGENCIES (17)—Continued

Santa Ana (SHFA–COMP)

IDAHO HOUSING AND FINANCE ASSOCIATION, 565 West Myrtle, P.O. Box 7899, Boise, ID 83702 Grant Type: Comprehensive. Amount Awarded: $135,968.28.	WASHINGTON STATE HOUSING FINANCE COMMISSION, 1000 2nd Avenue, Suite 2700, Seattle, WA 98104–1046 Grant Type: Comprehensive. Amount Awarded: $164,624.38.

HECM (2) INTERMEDIARY (HECM)

MONEY MANAGEMENT INTERNATIONAL INC., 9009 West Loop South, Suite 700, Houston, TX 77096–1719 Grant Type: HECM. Amount Awarded: $1,135,000.00.	NATIONAL FOUNDATION FOR CREDIT COUNSELING, INC., 801 Roeder Road, Suite 900, Silver Spring, MD 20910–3372 Grant Type: HECM. Amount Awarded: $1,865,000.00.

[FR Doc. E8–6099 Filed 3–25–08; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

[Docket No. FR–5141–N–05]

Conference Call Meeting of the Manufactured Housing Consensus Committee

AGENCY: Office of the Assistant Secretary for Housing—Federal Housing Commissioner, HUD.

ACTION: Notice of upcoming meeting via conference call.

SUMMARY: This notice sets forth the schedule and proposed agenda of an upcoming meeting of the Manufactured Housing Consensus Committee (the Committee) to be held via telephone conference. This meeting is open to the general public, which may participate by following the instructions below.

DATES: The conference call meeting will be held on Wednesday, April 9, 2008, from 2 p.m. to 5 p.m. eastern daylight time.

ADDRESSES: Information concerning the conference call can be obtained from the Department's Consensus Committee Administering Organization, the National Fire Protection Association (NFPA). Interested parties can link onto the NFPA's Web site for instructions concerning how to participate, and for contact information for the conference call, in the section marked ''Business'' ''Manufactured Housing Consensus Committee Information''. The link can be found at: *http://www.hud.gov/offices/hsg/sfh/mhs/mhshome.cfm.*

Alternately, interested parties may contact Jill McGovern of NFPA at (617) 984–7404 (this is not a toll-free number) for conference call information.

FOR FURTHER INFORMATION CONTACT: William W. Matchneer III, Associate Deputy Assistant Secretary, Office of Regulatory Affairs and Manufactured Housing, Department of Housing and Urban Development, 451 7th Street, SW., Washington, DC 20410, telephone (202) 708–6409 (this is not a toll-free number). Persons who have difficulty hearing or speaking may access this number via TTY by calling the toll-free Federal Information Relay Service at (800) 877–8339.

SUPPLEMENTARY INFORMATION: Notice of this meeting is provided in accordance with sections 10(a) and (b) of the Federal Advisory Committee Act (5 U.S.C. app. 2) and 41 CFR 102–3.150. The Manufactured Housing Consensus Committee was established under section 604(a)(3) of the National Manufactured Housing Construction and Safety Standards Act of 1974, as amended, 42 U.S.C. 5403(a)(3). The Committee is charged with providing recommendations to the Secretary to adopt, revise, and interpret manufactured home construction and safety standards and procedural and enforcement regulations, and with developing and recommending proposed model installation standards to the Secretary.

The purpose of this conference call meeting is for the Committee to review and provide comments to the Secretary on a draft proposed rule for the On-Site Completion of Construction of Manufactured Homes.

Tentative Agenda

A. Roll call.

B. Welcome and opening remarks.

C. Update on rules and appointment status.

D. Full Committee meeting for discussion of the On-Site Completion of Construction of Manufactured Homes Draft Proposed Rule.

E. Adjournment.

Dated: March 19, 2008.

Frank L. Davis,

General Deputy Assistant Secretary for Housing.

[FR Doc. E8–6098 Filed 3–25–08; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R8–ES–2008–N0042; 80221–1112–0000–F2]

Tehachapi Uplands Multi-species Habitat Conservation Plan

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), we, the Fish and Wildlife Service (Service), advise the public of our intent to gather information necessary to prepare an Environmental Impact Statement (EIS) on the Tehachapi Uplands Multi-species Habitat Conservation Plan (MSHCP). Tejon Ranch is preparing the MSHCP to apply for a 50-year incidental take permit under section 10(a)(1)(B) of the Federal Endangered Species Act of 1973, as amended, (Act). The permit is needed to authorize the incidental take of threatened and endangered species that could occur as a result of activities covered by the plan.

The Service provides this notice to (1) describe the proposed action and possible alternatives; (2) advise other Federal and State agencies, affected Tribes, and the public of our intent to prepare an EIS; (3) announce the initiation of a public scoping period; and (4) obtain suggestions and information on the scope of issues to be included in the EIS. A similar Notice of Intent was published on June 25, 2004 (69 FR 35663) when this project was called the Tejon Condor Habitat

Conservation Plan. Because the project has been broadened to include additional species, this second Notice of Intent is being published to gather additional information.

DATES: Written comments should be received on or before April 25, 2008.

ADDRESSES: Written comments submitted to Mary Grim, Section 10 Program Coordinator, U.S. Fish and Wildlife Service, 2800 Cottage Way, W–2605, Sacramento, CA 95825. Comments may also be sent by e-mail to: *tu_hcp_eis@fws.gov*. Comments previously received during the initial public scoping period will also be considered.

FOR FURTHER INFORMATION CONTACT: Mary Grim, U.S. Fish and Wildlife Service, at 916–414–6464.

SUPPLEMENTARY INFORMATION

Background

Section 9 of the Act and Federal regulations prohibit the ''take'' of wildlife species listed as endangered or threatened (16 U.S.C. 1538). The Act defines the term ''take'' as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed species, or to attempt to engage in such conduct (16 U.S.C. 1532). Harm includes significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering [50 CFR 17.3(c)]. Pursuant to section 10(a)(1)(B) of the Act, the Service may issue permits to authorize ''incidental take'' of listed species. ''Incidental Take'' is defined by the Act as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Regulations governing permits for threatened species and endangered species, respectively, are at 50 CFR 17.32 and 50 CFR 17.22. All species included on an incidental take permit would receive assurances under the Service's ''No Surprises'' regulation [50 CFR 17.22(b)(5) and 17.32(b)(5)].

Species proposed for coverage in the HCP are species that are currently listed as federally threatened or endangered or have the potential to become listed during the life of this MSHCP and have some likelihood to occur within the project area. Should any of the unlisted covered wildlife species become listed under the Act during the term of the permit, take authorization for those species would become effective upon listing. Six plant species and 28 animal species are known to occur within the area and would be covered by the MSHCP. Species may be added to or deleted from the list of proposed covered species during the course of the development of the MSHCP based on further analysis, new information, agency consultation, and public comment. Currently, the MSHCP would include the following federally listed animal species: California condor (*Gymnogyps californianus*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), Valley elderberry longhorn beetle (*Democerus californicus dimorphus*), and Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The MSHCP would also include the following State listed and unlisted species: Tehachapi slender salamander (*Batrachoseps stebbinsi*), bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrines anatum*), little willow flycatcher (*Empidonax traillii brewsteri*), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucorux*), ringtail (*Bassariscus astutus*), tricolored blackbird (*Agelaius tricolor*), California spotted owl (*Strix occidentalis occidentalis*), Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*), burrowing owl (*Athene cunicularia*), yellow-blotched salamander (*Ensatina eschscholtzi croceater*), western spadefoot (*Spea hammondii*), purple martin (*Progne subis*), northern goshawk (*Accipiter gentalis*), coast horned lizard (frontale and blainvilli populations) (*Phrynosoma coronatum*), Cooper's hawk (*Accipiter cooperii*), yellow-breasted chat (*Icteria virens*), prairie falcon (*Falco mexicanus*), northern harrier (*Circus cyaneus*), long-eared owl (*Asio otus*), two-striped garter snake (*Thamnophis hammondii*), round-leaved filaree (*Erodium macrophyllum*), Fort Tejon woolly sunflower (*Eriophyllum lanatum* var. *hallii*), Kusche's sandwort (*Amenaria macradenia* var. *kuschei*), Tehachapi buckwheat (*Eriogonum callistum*), American badger (*Taxidea taxus*), striped adobe lily (*Fritillaria striata*), and Tejon poppy (*Eschscholzia lemmonii* ssp. *Kernensis*).

Activities proposed to be covered by the MSHCP include limited private development; livestock grazing and range management; film production; maintenance and construction of underground utilities; recreation with the exception of hunting; existing commercial and residential improvements; farming and irrigation systems; repair, maintenance, and use of roads; and existing mineral extraction facilities. The MSHCP will propose a conservation strategy to minimize and mitigate to the maximum extent possible any impacts that would occur to covered species as the result of the covered activities.

Environmental Impact Statement

The EIS will consider the proposed action (i.e., the issuance of a section 10(a)1(B) permit under the Act), no action (no section 10 permit), and a reasonable range of alternatives. A detailed description of the proposed action and alternatives will be included in the EIS. The EIS will also identify potentially significant impacts on biological resources, land use, air quality, water resources, transportation, and other environmental resource issues that could occur directly or indirectly with implementation of the proposed action and alternatives. Different strategies for avoiding, minimizing, and mitigating the impacts of incidental take may also be considered.

Environmental review of the EIS will be conducted in accordance with the requirements of NEPA (42 U.S.C. 4321 *et seq.*), its implementing regulations (40 CFR parts 1500–1508), other applicable regulations, and Service procedures for compliance with those regulations. This notice is being furnished in accordance with 40 CFR Section 1501.7 and 1508.22 to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to be addressed in the EIS. The primary purpose of the scoping process is to identify important issues raised by the public related to the proposed action. Written comments from interested parties are invited to ensure that the full range of issues related to the permit application is identified. Comments will only be accepted in written form. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Ken McDermond,

Deputy Regional Director, California Nevada Region, Sacramento, California.

[FR Doc. E8–6185 Filed 3–25–08; 8:45 am]

BILLING CODE 4310–55–P

conduct certain activities with endangered species pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended.

DATES: To ensure consideration, written comments must be received on or before July 7, 2008.

ADDRESSES: Written comments should be submitted to the Chief, Endangered Species Division, Ecological Services, P.O. Box 1306, Room 4102, Albuquerque, New Mexico 87103. Documents and other information submitted with these applications are available for review, subject to the requirements of the Privacy Act and Freedom of Information Act. Documents will be available for public inspection, by appointment only, during normal business hours at the U.S. Fish and Wildlife Service, 500 Gold Ave. SW., Room 4102, Albuquerque, New Mexico. Please refer to the respective permit number for each application when submitting comments.

FOR FURTHER INFORMATION CONTACT: Chief, Endangered Species Division, P.O. Box 1306, Room 4102, Albuquerque, New Mexico 87103, (505) 248–6920.

SUPPLEMENTARY INFORMATION:

Public Availability of Comments

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Permit TE–175891

Applicant: Robert Burton, Winkelman, Arizona.

Applicant requests a new permit for research and recovery purposes to conduct presence/absence surveys of southwestern willow flycatcher (*Empidonax traillii extimus*) within Arizona.

Permit TE–051819

Applicant: Fort Worth Zoo, Fort Worth, Texas.

Applicant requests an amendment to a current permit to establish and maintain captive breeding facilities for Barton Spring salamander (*Eurycea sosorum*) and Houston toad (*Bufo houstonensis*) within the Fort Worth Zoo.

Permit TE–037118

Applicant: Scott Carroll, Tucson, Arizona.

Applicant requests an amendment to a current permit for research and recovery purposes to conduct presence/absence surveys of southwestern willow flycatcher (*Empidonax traillii extimus*) within Arizona.

Permit TE–178778

Applicant: Jane Marks, Marks Lab of Aquatic Ecology, Northern Arizona University.

Applicant requests a new permit for research and recovery purposes to conduct presence/absence surveys of Gila topminnow (*Poeciliopsis occidentalis*) and razorback sucker (*Xyrauchen texanus*) within Fossil Creek and Gila Counties, Arizona.

Permit TE–794593

Applicant: Texas State Aquarium, Corpus Christi, Texas.

Applicant requests an amendment to a current permit for research and recovery purposes to hold and maintain brown pelicans (*Pelecanus occidentalis*) within the Texas State Aquarium.

Permit TE–014168

Applicant: Peter Sprouse, Buda, Texas.

Applicant requests an amendment to a current permit for research and recovery purposes to conduct presence/absence surveys of the following species: San Marcos salamander (*Eurycea nana*), Texas blind salamander (*Eurycea rathbuni*), Peck's Cave amphipod (*Stygobromus pecki*), Comal Springs dryopid beetle (*Stygoparnus comalensis*), Comal Springs riffle beetle (*Heterelmis comalensis*), and Mexican blindcat (catfish) (*Prietella phreatophila*) within Texas.

Permit TE–051832

Applicant: Phoenix Zoo, Phoenix, Arizona.

Applicant requests an amendment to a current permit to hold and maintain the following species: Mexican gray wolf (*Canis lupus baileyi*), thick-billed parrot (*Rhynchopsitta pachyrhyncha*), masked bobwhite quail (*Colinus virginianius ridgwayi*), speckled dace (*Rhinichthys osculus*), Gila topminnow (*Poeciliopsis occidentalis*), and desert pupfish (*Cyprinodon macularius*) within the Phoenix Zoo.

Authority: 16 U.S.C. 1531 *et seq.*

Dated: May 1, 2008.

Thomas L. Bauer,

Acting Regional Director, Southwest Region, Fish and Wildlife Service.

[FR Doc. E8–12466 Filed 6–3–08; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R8–ES–2008–N0109; 80221–1112–0000–F2]

Tehachapi Uplands Multi-Species Habitat Conservation Plan

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), we, the Fish and Wildlife Service (Service), advise the public of our intent to gather information necessary to prepare an Environmental Impact Statement (EIS) on the Tehachapi Uplands Multi-species Habitat Conservation Plan (MSHCP). Tejon Ranch is preparing the MSHCP to apply for a 50-year incidental take permit under Section 10(a)(1)(B) of the Federal Endangered Species Act of 1973, as amended, (Act). The permit is needed to authorize the incidental take of threatened and endangered species that could occur as a result of activities covered by the plan.

The Service provides this notice to (1) describe the proposed action and possible alternatives; (2) advise other Federal and State agencies, affected Tribes, and the public of our intent to prepare an EIS; (3) announce the initiation of a public scoping period; and (4) obtain suggestions and information on the scope of issues to be included in the EIS. Similar Notices of Intent were published on June 25, 2004 (69 FR 35663) and March 26, 2008 (73 FR 16052). This notice is being published to clarify the proposed action, to correct a previous **ADDRESSES** error, and to allow additional public input.

DATES: Written comments should be received on or before July 7, 2008.

ADDRESSES: Written comments submitted to Mary Grim, Section 10 Program Coordinator, U.S. Fish and Wildlife Service, 2800 Cottage Way, W–2605, Sacramento, CA 95825. Comments may also be sent by e-mail to *tu_hcp_eis@fws.gov*. Comments previously received during previous public scoping periods will also be considered.

FOR FURTHER INFORMATION CONTACT: Mary Grim, U.S. Fish and Wildlife Service, at 916–414–6464.

SUPPLEMENTARY INFORMATION:

Background

Section 9 of the Act and Federal regulations prohibit the ''take'' of wildlife species listed as endangered or threatened (16 U.S.C. 1538). The Act

defines the term ''take'' as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed species, or to attempt to engage in such conduct (16 U.S.C. 1532). Harm includes significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering [50 CFR 17.3(c)]. Pursuant to section 10(a)(1)(B) of the Act, the Service may issue permits to authorize ''incidental take'' of listed animal species. ''Incidental Take'' is defined by the Act as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Regulations governing permits for threatened species and endangered species, respectively, are at 50 CFR 17.32 and 50 CFR 17.22. All species included on an incidental take permit would receive assurances under the Service's ''No Surprises'' regulation [50 CFR 17.22(b)(5) and 17.32(b)(5)].

Species proposed for coverage in the HCP are species that are currently listed as federally threatened or endangered or have the potential to become listed during the life of this MSHCP and have some likelihood to occur within the project area. Should any of the unlisted covered wildlife species become listed under the Act during the term of the permit, take authorization for those species would become effective upon listing. Six plant species and 28 animal species are known to occur within the area and are proposed to be covered by the MSHCP. Species may be added to or deleted from the list of proposed covered species during the course of the development of the MSHCP based on further analysis, new information, agency consultation, and public comment. Currently, the MSHCP would include the following federally listed animal species: California condor (*Gymnogyps californianus*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), Valley elderberry longhorn beetle (*Democerus californicus dimorphus*), and Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The MSHCP would also include the following State listed and unlisted species: Tehachapi slender salamander (*Batrachoseps stebbinsi*), bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrines anatum*), little willow flycatcher (*Empidonax traillii brewsteri*), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucorux*), ringtail (*Bassariscus astutus*), tricolored blackbird (*Agelaius tricolor*), California spotted owl (*Strix occidentalis occidentalis*), Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*), burrowing owl (*Athene cunicularia*), yellow-blotched salamander (*Ensatina eschscholtzi croceater*), western spadefoot (*Spea hammondii*), purple martin (*Progne subis*), northern goshawk (*Accipiter gentalis*), coast horned lizard (frontale and blainvilli populations) (*Phrynosoma coronatum*), Cooper's hawk (*Accipiter cooperii*), yellow-breasted chat (*Icteria virens*), prairie falcon (*Falco mexicanus*), northern harrier (*Circus cyaneus*), long-eared owl (*Asio otus*), two-striped garter snake (*Thamnophis hammondii*), round-leaved filaree (*Erodium macrophyllum*), Fort Tejon woolly sunflower (*Eriophyllum lanatum var. hallii*), Kusche's sandwort (*Amenaria macradenia* var. *kuschei*), Tehachapi buckwheat (*Eriogonum callistum*), American badger (*Taxidea taxus*), striped adobe lily (*Fritillaria striata*), and Tejon poppy (*Eschscholzia lemmonii* ssp. *Kernensis*).

Activities proposed to be covered by the MSHCP include limited private development; livestock grazing and range management; film production; maintenance and construction of underground utilities; recreation with the exception of hunting; existing commercial and residential improvements; farming and irrigation systems; repair, maintenance, and use of roads; and existing mineral extraction facilities. The MSHCP would not cover hunting, nor would it cover the lethal take of California condors. The MSHCP will propose a conservation strategy to minimize and mitigate to the maximum extent possible any impacts that would occur to covered species as the result of the covered activities.

Environmental Impact Statement

The EIS will consider the proposed action (i.e., the issuance of a section 10(a)1(B) permit under the Act), no action (no section 10 permit), and a reasonable range of alternatives. A detailed description of the proposed action and alternatives will be included in the EIS. The EIS will also identify potentially significant impacts on biological resources, land use, air quality, water resources, transportation, and other environmental resource issues that could occur directly or indirectly with implementation of the proposed action and alternatives. Different strategies for avoiding, minimizing, and mitigating the impacts of incidental take may also be considered.

Environmental review of the EIS will be conducted in accordance with the requirements of NEPA (42 U.S.C. 4321 *et seq.*), its implementing regulations (40 CFR parts 1500–1508), other applicable regulations, and Service procedures for compliance with those regulations. This notice is being furnished in accordance with 40 CFR Section 1501.7 and 1508.22 to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to be addressed in the EIS. The primary purpose of the scoping process is to identify important issues raised by the public related to the proposed action. Written comments from interested parties are invited to ensure that the full range of issues related to the permit application is identified. Comments will only be accepted in written form. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Dated: May 29, 2008.

Ken McDermond,

Deputy Regional Director, California Nevada Region, Sacramento, California.

[FR Doc. E8–12426 Filed 6–3–08; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R9–IRTM–2008–N0095; 90250–1660–6050–9Z]

Privacy Act of 1974; Amendments to Existing Systems of Records

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed amendment of existing Privacy Act systems of records.

SUMMARY: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), the U.S. Fish and Wildlife Service of the Department of the Interior is issuing public notice of its intent to amend 19 existing Privacy Act systems of records notices to add a new routine use to authorize the disclosure of records to individuals involved in responding to a breach of Federal data.

DATES: Comments must be received by July 14, 2008. The notice will be

Washington, DC 20460; T: 202–566–0405; F: 202–566–0409; *healy.richard@epa.gov.*

Region I—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island

Matt Liebman USEPA Region I, One Congress St., Suite 1100–COP, Boston, MA 02114–2023; T: 617–918–1626; F: 617–918–1505; *liebman.matt@epa.gov.*

Region II—New Jersey, New York, Puerto Rico, U.S. Virgin Islands

Helen Grebe USEPA Region II, 2890 Woodbridge Ave., MS220, Edison, NJ 08837–3679; T: 732–321–6797; F: 732–321–6616; *grebe.helen@epa.gov.*

Region III—Delaware, Maryland, Pennsylvania, Virginia

Denise Hakowski USEPA Region III, 1650 Arch Street, 3WP30, Philadelphia, PA 19103–2029; T: 215–814–5726; F: 215–814–2318; *hakowski.denise@epa.gov.*

Region IV—Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina

Joel Hansel USEPA Region IV, 61 Forsyth St., 15th Floor, Atlanta, GA 30303–3415; T: 404–562–9274; F: 404–562–9224; *hansel.joel@epa.gov.*

Region V—Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

Holly Wirick USEPA Region V, 77 West Jackson Blvd., WT–16J, Chicago, IL 60604–3507; T: 312–353–6704; F: 312–886–0168; *wirick.holiday@epa.gov.*

Region VI—Louisiana, Texas

Mike Schaub USEPA Region VI, 1445 Ross Ave., 6WQ–EW, Dallas, TX 75202–2733; T: 214–665–7314; F: 214–665–6689; *schaub.mike@epa.gov.*

Region IX—American Samoa, Commonwealth of the Northern Mariana Islands, California, Guam, Hawaii

Terry Fleming USEPA Region IX, 75 Hawthorne St., WTR–2, San Francisco, CA 94105; T: 415-972–3462; F: 415–947–3537; *fleming.terrence@epa.gov.*

Region X—Alaska, Oregon, Washington

Rob Pedersen USEPA Region X, 120 Sixth Ave., OW–134, Seattle, WA 98101; T: 206–553–1646; F: 206–553–0165; *pedersen.rob@epa.gov.*

Dated: January 14, 2009.

Benjamin H. Grumbles,

Assistant Administrator for Water.

[FR Doc. E9–1397 Filed 1–22–09; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–8589–7]

Environmental Impacts Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7167 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements

Filed 01/12/2009 Through 01/16/2009

Pursuant to 40 CFR 1506.9.

EIS No. 20090007, Draft EIS, BLM, CA, Carrizo Plain National Monument, Draft Resource Management Plan, Implementation, San Luis Obispo County and Portion of western Kern County, CA, *Comment Period Ends:* 04/22/2009, *Contact:* Katherine Worn 661–391–6067.

EIS No. 20090008, Draft EIS, FHW, WY, Jackson South Project, Proposes to Improve Seven Miles of U.S. 26/89/189/191/, Funding and Right-of-Way Approval, Teton County, WY, *Comment Period Ends:* 03/09/2009, *Contact:* Lee Potter 307–772–2004 Ext. 146.

EIS No. 20090009, Final EIS, AFS, WA, Republic Ranger Station Excess Residence Sale Project, Proposes to Sell a 0.72 Acre Parcel of Land with a Residential Building, Republic Ranger District, Colville National Forest, Ferry County, WA, *Wait Period Ends:* 02/23/2009, *Contact:* James L. Parker 509–775–7462.

EIS No. 20090010, Draft EIS, USN, WA, Swimmer Interdiction Security System (SISS) Project, Construction and Operation, Naval Base Kitsap—Bangor, Silverdale, Kitsap County, WA, *Comment Period Ends:* 03/09/2009, *Contact:* Shannon Kasa 619–553–3889.

EIS No. 20090011, Draft EIS, SFW, CA, Tehachapi Uplands Multiple Species Habitat Conservation Plan (TUMSHCP), Propose Issuance of a 50–Year Incidental Take Permit for 27 Federal- and State-Listed and Unlisted Species, Kern County, CA, *Comment Period Ends:* 04/22/2009, *Contact:* Mary Grim 916–414–6464.

EIS No. 20090012, Final EIS, NOA, 00, Proposed Acceptable Biological Catch (ABC) and Optimum Yield (OY) Specifications and Management Measures for the 2009–2010 Pacific Coast Groundfish Fishery Management Plan, Implementation, WA, OR and CA, *Wait Period Ends:* 02/23/2009, *Contact:* Robert Lohn 206–526–6150.

EIS No. 20090013, Draft EIS, CGD, 00, Programmatic—Future of the U.S. Coast Guard Long Range Aids to Navigation (LORAN–C) Program, Implementation, *Comment Period Ends:* 03/09/2009, *Contact:* CDR. Bob I. Feigenblatt 202–372–1558

EIS No. 20090014, Final EIS, NOA, OR, Bull Run Water Supply Habitat Conservation Plan, Application for and Incidental Take Permit to cover the Continued Operation and Maintenance, Sandy River Basin, City of Portland, OR, *Wait Period Ends:* 02/23/2009, *Contact:* D. Robert Lohn 301–713–1632.

EIS No. 20090015, Final EIS, FHW, TN, TN–397 (Mack Hatcher Parkway Extension) Construction from US–31 (TN–6, Columbia Avenue) South of Franklin to US–341 (TN–106, Hillsboro Road) North of Franklin, Additional Information on the Build Alternative (Alternative G), Williamson County and City of Franklin, TN, *Wait Period Ends:* 02/23/2009, *Contact:* Bobby Blackmon 615–781–5770.

Amended Notices

EIS No. 20080460, Draft EIS, FHW, CO, I–70 East Project, Transportation Improvement from I–70 East from 1–25 to Tower Road, Funding, City and County Denver, CO, *Comment Period Ends:* 03/31/2009, *Contact:* Chris Horn 720–963–3017. *Revision to FR Notice Published 11/14/2008:* Extending 12/31/2009 to 03/31/2009.

EIS No. 20080470, Final EIS, FHW, VT, Middlebury Spur Project, Improvements to the Freight Transportation System in the Town of Middlebury in Addison County to the Town of Pittsford in Rutland County, VT, *Wait Period Ends:* 01/30/2009, *Contact:* Kenneth Sikora, Jr.802–828–4573. *Revision to FR Published 11/21/2008:* Extending Wait Period from 12/23/2008 to 01/30/2009.

EIS No. 20080538, Second Draft Supplement, NRC, VA, North Anna Power Station Unit 3, Combined License (COL) application for Construction and Operation a Based-Load Nuclear Power Plant, (NUREG–1917), in the Town of Mineral, Louisa County, VA, *Comment Period Ends:* 03/20/2009, *Contact:* Alicia Williamson 301–415–1878. *Revision to FR Notice Published 01/02/2009:* Extending Comment Period from 03/16/2009 to 03/20/2009.

Dated: January 16, 2009.

Ken Mittelholtz,

Environmental Protection Specialist, Office of Federal Activities.

[FR Doc. E9–1394 Filed 1–22–09; 8:45 am]

BILLING CODE 6560–50–P

ACTION: Notice of receipt of applications for permit.

SUMMARY: The public is invited to comment on the following applications to conduct certain activities with endangered species.

DATES: Written data, comments or requests must be received by March 6, 2009.

ADDRESSES: Documents and other information submitted with these applications are available for review, subject to the requirements of the Privacy Act and Freedom of Information Act, by any party who submits a written request for a copy of such documents within 30 days of the date of publication of this notice to: U.S. Fish and Wildlife Service, Division of Management Authority, 4401 North Fairfax Drive, Room 212, Arlington, Virginia 22203; fax 703/358–2281.

FOR FURTHER INFORMATION CONTACT: Division of Management Authority, telephone 703/358–2104.

SUPPLEMENTARY INFORMATION:

Endangered Species

The public is invited to comment on the following applications for a permit to conduct certain activities with endangered species. This notice is provided pursuant to Section 10(c) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). Written data, comments, or requests for copies of these complete applications should be submitted to the Director (address above).

Applicant: University of Washington, National Primate Research Center, Seattle, WA, PRT–199108

The applicant requests a permit to import blood samples of Bornean orangutans (*Pongo pygmaeus*) from Canada for the purpose of scientific research on the incidence of disease in captive-held orangutans in an Indonesian orangutan rehabilitation center. This notification covers a one-time import.

Applicant: Gibbon Conservation Center, Santa Clarita, CA, PRT–204841

The applicant requests a permit to import two male captive-born siamangs (*Symphalangus syndactylus*), and one male captive-born Javan gibbon (*Hylobates moloch*) from the Port Lympne Wild Animal Park, United Kingdom, for the purpose of enhancement of the species through captive breeding.

Applicant: Gibbon Conservation Center, Santa Clarita, CA, PRT–204842

The applicant requests a permit to export one male and re-export one female captive-born siamang (*Symphalangus syndactylus*) to the Zooz Park, Ontario, Canada, for the purpose of enhancement of the species through captive breeding.

Applicant: David L. Clark, Seattle, WA, PRT–203410

The applicant requests a permit to import the sport-hunted trophy of one female brown hyena (*Parahyaena brunnea*) from Namibia for personal use.

Applicant: Roger A. Rose, West Olive, MI, PRT–203526

The applicant requests a permit to import the sport-hunted trophy of one male bontebok (*Damaliscus pygargus pygargus*) culled from a captive herd maintained under the management program of the Republic of South Africa, for the purpose of enhancement of the survival of the species.

Applicant: Anthony J. White, Rison, AR, PRT–203517

The applicant requests a permit to import the sport-hunted trophy of one male bontebok (*Damaliscus pygargus pygargus*) culled from a captive herd maintained under the management program of the Republic of South Africa, for the purpose of enhancement of the survival of the species.

Applicant: Leslie F. Howell Jr., Clearwater, FL, PRT–203831

The applicant requests a permit to import the sport-hunted trophy of one male bontebok (*Damaliscus pygargus pygargus*) culled from a captive herd maintained under the management program of the Republic of South Africa, for the purpose of enhancement of the survival of the species.

Dated: January 23, 2009.

Lisa J. Lierheimer,

Senior Permit Biologist, Branch of Permits, Division of Management Authority.

[FR Doc. E9–2309 Filed 2–3–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R8–2008–N0289; 1112–0000–80221–F2]

Tehachapi Uplands Multiple Species Habitat Conservation Plan

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of availability and receipt of application.

SUMMARY: This notice announces the availability of the draft Tehachapi Uplands Multiple Species Habitat Conservation Plan (MSHCP), draft Implementing Agreement (IA), and draft Environmental Impact Statement (EIS) for public review and comment. We, the Fish and Wildlife Service (Service), are considering the issuance of a 50-year incidental take permit (permit) for 27 species in response to receipt of an application prepared by Tejon Ranch Corporation (Tejon or Applicant) pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (Act). The permit is needed because take of species could occur within 141,886 acres of covered lands on the Tejon Ranch as the result of on-going ranch activities and approximately 5,533 acres of mountain resort and other development within and adjacent to the Interstate 5 corridor and Lebec community in Kern County, California. The MSHCP proposes a conservation strategy to minimize and mitigate to the maximum extent practicable any impacts that could occur to covered species as the result of the covered activities.

DATES: Written comments must be received on or before May 5, 2009.

ADDRESSES: Written comments may be submitted to Mary Grim, Section 10 Program Coordinator, U.S. Fish and Wildlife Service, 2800 Cottage Way, W–2605, Sacramento, CA 95825. Comments may also be sent by e-mail to *fw8tumshcp@fws.gov*.

FOR FURTHER INFORMATION CONTACT: Steve Kirkland, U.S. Fish and Wildlife Service, at 805–644–1766.

SUPPLEMENTARY INFORMATION:

Availability of Documents

Individuals wishing to receive copies of the application, draft HCP, draft EIS, and draft IA, should contact the Service by telephone (see **FOR FURTHER INFORMATION CONTACT**). Copies of the subject documents are also available for public inspection during regular business hours at the Ventura Fish and Wildlife Office [see **FOR FURTHER INFORMATION CONTACT**], and may be downloaded from the Ventura Fish and Wildlife Office Web site at: *http://www.fws.gov/ventura/*.

Background

Section 9 of the Act and Federal regulations prohibit the ''take'' of wildlife species listed as endangered or threatened (16 U.S.C. 1538). The Act defines the term ''take'' as: to harass,

harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed species, or to attempt to engage in such conduct (16 U.S.C. 1532). Harm includes significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering [50 CFR 17.3(c)]. Pursuant to section 10(a)(1)(B) of the Act, the Service may issue permits to authorize ''incidental take'' of listed animal species. ''Incidental Take'' is defined by the Act as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Regulations governing permits for threatened species and endangered species, respectively, are at 50 CFR 17.32 and 50 CFR 17.22.

Although take of listed plant species is not prohibited under the Act, and therefore cannot be authorized by an incidental take permit, plant species may be included on a permit in recognition of the conservation benefits provided to them by a habitat conservation plan. All species included on an incidental take permit would receive assurances under the Service's ''No Surprises'' regulation [50 CFR 17.22(b)(5) and 17.32(b)(5)].

We have received an application for an incidental take permit covering 27 listed and unlisted species that may be taken or otherwise affected by on-going ranch activities and future low density residential and commercial development activities on a portion of the Tejon Ranch. The potential impacts of take that could result from such covered activities would be avoided, minimized and mitigated as described in the Tehachapi Uplands Multiple Species Habitat Conservation Plan (plan) submitted as part of the incidental take permit application by Tejon. The Applicant has prepared the plan to satisfy the requirements for a section 10(a)(1)(B) permit under the Act.

The Applicant seeks a 50-year incidental take permit for covered activities within 141,886 acres of covered lands on Tejon Ranch lands in Kern County, California. Activities covered by the permit would include ongoing activities that have historically occurred at the Ranch, such as grazing and film production, as well as planned future community development of approximately 5,533 acres within and adjacent to the Interstate-5 corridor in the Tejon Mountain Village Planning Area and the Lebec/Existing Headquarters area, and take minimization, mitigation and conservation measures provided under the MSHCP. The permit would not cover hunting or mineral extraction.

Species proposed for coverage in the MSHCP are species that are currently listed as federally threatened or endangered or have the potential to become listed during the term of the permit and have some likelihood to occur within the plan area. Several of the species proposed for coverage are also listed under the California Endangered Species Act or identified as Fully Protected species or species of special concern under state law. Should any of the unlisted covered wildlife species become listed under the Act during the term of the permit, take authorization for those species would become effective upon listing. Twenty-one animal species and six plant species are known or have the potential to occur within the plan area and are proposed to be covered by the permit (Covered Species). The permit would include the following federally listed animal species: California condor (*Gymnogyps californianus*—federally listed as endangered and state listed as endangered and fully protected), least Bell's vireo (*Vireo bellii pusillus*—federally and state listed as endangered), southwestern willow flycatcher (*Empidonax traillii extimus*—federally and state listed as endangered), and Valley elderberry longhorn beetle (*Democerus californicus dimorphus*—federally listed as threatened). The permit would also include the following species currently unlisted under the Act: Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*—federal candidate for listing and state listed as endangered); Tehachapi slender salamander (*Batrachoseps stebbinsi*—state listed as threatened), bald eagle (*Haliaeetus leucocephalus*—state listed as endangered), American peregrine falcon (*Falco peregrinus anatum*—state listed as endangered and fully protected), little willow flycatcher (*Empidonax traillii brewsteri*—state listed as endangered), golden eagle (*Aquila chrysaetos*—state species of special concern and fully protected), white-tailed kite (*Elanus leucurus*—state fully protected), ringtail (*Bassariscus astutus*—state fully protected), tricolored blackbird (*Agelaius tricolor*—state species of concern), Tehachapi pocket mouse (*Perognathus alticola inexpectatus*—state species of concern), burrowing owl (*Athene cunicularia*—state species of concern), yellow-blotched salamander (*Ensatina eschscholtzii croceater*—state species of concern), western spadefoot (*Spea hammondii*—state species of concern), purple martin (*Progne subis*—state species of concern), yellow warbler (*Dendroica petechia brewsteri*—state species of concern), coast horned lizard (*Phrynosoma coronatum* (both *frontale* and *blainvillii* populations)—state species of concern), two-striped garter snake (*Thamnophis hammondii*—state species of concern), round-leaved filaree (*Erodium macrophyllum*), Fort Tejon woolly sunflower (*Eriophyllum lanatum* var. *hallii*), Kusche's sandwort (*Arenaria macradenia* var. *kuschei*), Tehachapi buckwheat (*Eriogonum callistum*), striped adobe lily (*Fritillaria striata*—state listed as threatened), and Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*).

The MSHCP includes a conservation strategy intended to avoid, minimize and mitigate to the maximum extent practicable any impacts that would occur to covered species as the result of the covered activities. Under the plan, and consistent with the Tejon Ranch Conservation and Land Use Agreement between Tejon and the Sierra Club, National Audubon Society, Natural Resources Defense Council, Endangered Habitats League, and Planning and Conservation League, no land development would be allowed within approximately 93,522 acres of Covered Lands, including the approximately 37,100-acre Tunis and Winters ridge area, which is designated as the Condor Study Area under the plan and is the area of the ranch most likely to be frequented by condors. An additional 23,001 acres would be preserved as open space within the Tejon Mountain Village planning area, resulting in the permanent conservation of approximately 82 percent of the Covered Lands (MSHCP Mitigation Lands). Upon initiation of construction of the Tejon Mountain Village development, the MSCHP requires that the MSHCP Mitigation Lands be permanently protected by phased recordation of conservation easements or equivalent legal restrictions over all such lands by the end of the permit term. The MSCHP also requires implementation of general and species-specific take avoidance, minimization and mitigation measures to reduce potential impacts to the covered species. With regard to the California condor, the plan requires the ongoing monitoring of covered activities by a qualified biologist to reduce the potential for any human/condor interactions and the permanent enforcement of covenants, conditions and restrictions on residential development to minimize any impacts to condors. The plan also provides funding for condor capture, care and relocation in the unlikely event that a condor becomes habituated to human activities and includes a

supplemental feeding program for condors. No lethal take of condors would be authorized under the permit.

National Environmental Policy Act Compliance

The Service's proposed issuance of an incidental take permit is a federal action and triggers the need for compliance with the National Environmental Policy Act (NEPA). The Service has prepared a draft EIS that evaluates the impacts of proposed issuance of the permit and implementation of the MSHCP, and also evaluates the impacts of a reasonable range of alternatives.

The draft EIS analyzes three alternatives in addition to the proposed MSHCP, summarized above. The Service has identified the proposed MSHCP as the Preferred Alternative. Additional alternatives are described below.

No Action/No MSHCP Alternative: The No Action/No MSHCP Alternative allows for development in areas where the Service believes that no take of federally listed species is likely to occur and thus no ITP is required. The No Action/No MSHCP Alternative generally includes ongoing Ranch uses as well as development of the Covered Lands that could occur consistent with the Kern County General Plan—Land Use Designations on the approximately 56,922 acres of the Covered Lands that are outside of the CSA and a two-mile buffer area around the CSA. This Alternative provides for development of up to 5,897 residential units and 6,512,200 square feet of commercial space.

Condor HCP Alternative: The Condor HCP Alternative would result in the issuance of an ITP covering only the California condor. No development would occur within the CSA for the 50-year term of the ITP, but permanent conservation easements would not be recorded within the CSA or elsewhere within the Covered Lands. This alternative would not include the comprehensive protective measures that would apply to all of the Covered Species in the Proposed MSHCP Alternative. The Condor HCP Alternative would include the same type and density of development within the Tejon Mountain Village Plan area and Lebec/Headquarters area as is included in the Proposed MSHCP Alternative, but would also include development consistent with the Kern County General Plan—Land Use Designations in all other portions of the Covered Lands except for the CSA. This Alternative provides for development of up to 7,100 residential units and 4,940,710 square feet of commercial space development.

MSHCP General Plan Buildout Alternative: The MSHCP General Plan Buildout Alternative would include issuance of an ITP for the five federally listed species identified above. Development in the locations, densities and intensities allowed under the current Kern County General Plan—Land Use Designations would be covered, except that no development would be allowed in the CSA during the term of the ITP. This Alternative provides for development of up to 8,752 residential units and 6,762,690 square feet of commercial space development.

Public Comments

If you wish to comment on the permit application, draft MSHCP, draft IA, or draft EIS, you may submit your comments to the address listed in the **ADDRESSES** section of this document. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

The Service will evaluate the application, associated documents, and comments submitted to them to prepare a final EIS. A permit decision will be made no sooner than 30 days after the publication of the final EIS and completion of the Record of Decision.

This notice is provided pursuant to section 10(a) of the Act and pursuant to implementing regulations for NEPA (40 CFR 1506.6).

Dated: January 29, 2009.

Ken McDermond,

Deputy Regional Director, California and Nevada Region, Sacramento, California.

[FR Doc. E9–2303 Filed 2–3–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R9–EA–2009–N0009]; [97600–9792–0000–5d]

Sport Fishing and Boating Partnership Council

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of teleconference.

SUMMARY: We, the Fish and Wildlife Service (Service), announce a public teleconference of the Sport Fishing and Boating Partnership Council (Council).

DATES: We will hold the teleconference on Monday, February 23, 2009, 2–3 p.m. (Eastern time). If you wish to listen to the teleconference proceedings or submit written material for the Council to consider during the teleconference, notify Douglas Hobbs by Friday, February 13, 2009. If you wish to submit a written statement for Council consideration during the teleconference, we must receive it no later than February 16, 2009. See instructions under **SUPPLEMENTARY INFORMATION**.

FOR FURTHER INFORMATION CONTACT: Douglas Hobbs, Council Coordinator, 4401 N. Fairfax Dr., Mailstop 3103–AEA, Arlington, VA 22203; (703) 358–2336 (phone); (703) 358–2548 (fax), or *doug_hobbs@fws.gov* (e-mail).

SUPPLEMENTARY INFORMATION:

Background

In accordance with the requirements of the Federal Advisory Committee Act, 5 U.S.C. App., we give notice that the Council will hold a teleconference on Monday, February 23, 2009, from 2 to 3 p.m.

The Council was formed in January 1993 to advise the Secretary of the Interior, through the Director of the U.S. Fish and Wildlife Service, on nationally significant recreational fishing, boating, and aquatic resource conservation issues. The Council represents the interests of the public and private sectors of the sport fishing, boating, and conservation communities and is organized to enhance partnerships among industry, constituency groups, and government. The 18-member Council, appointed by the Secretary of the Interior, includes the Service Director and the president of the Association of Fish and Wildlife Agencies, who both serve in ex officio capacities. Other Council members are directors from State agencies responsible for managing recreational fish and wildlife resources and individuals who represent the interests of saltwater and freshwater recreational fishing, recreational boating, the recreational fishing and boating industries, recreational fisheries resource conservation, Native American tribes, aquatic resource outreach and education, and tourism. Background information on the Council is available at *http://www.fws.gov/sfbpc.*

The Council will convene to: (1) Approve recommendations to the Director of the Fish and Wildlife Service for funding Fiscal Year 2009 Boating

Appendix B

Land Use Calculations

PROPOSED MSHCP/CONDOR HCP ALTERNATIVE

Open Space	**Conservation**			**129,318**			
		RWA Open Space (includes CSA)		93,522			
		TMV Specific Plan Open Area (including Oso)		23,001			
		Potential Acquisition Areas		12,795			
Commercial/Residential Development Area (disturbance)			**Land Use Designation**	**AC**	**DU**	**SF**	**Net Disturbance Area (Acres)**
			Kern County				
		West of Freeway					
	4.1		Accepted County Plan Area*	153	173	304,920	153
		Frazier Park	*5.3 Max 10 Units/Net Acre*	*11*	*110*		
			5.4 Max 4 Units/Net Acre	*15*	*60*		
			5.8 Min 20 Gross Acres/Unit	*1*			
			6.2 General Commercial	*20*		*217,800*	
			8.3 Extensive Ag (1 du/20 acres)	*73*	*3*		
		O'Neil Canyon	*3.1 Public or Private Recreation*	*25*			
			6.3 Highway Commercial	*8*		*87,120*	
	8.3		Extensive Agriculture (1 du/20 acres)	17	1		17
		Tejon Mountain Village Specific Plan Developed Acres		26,417	3,450	160,000	5,082
		Oso Canyon		1,666			
	Tejon Mountain Village Planning Area			**28,253**	**3,624**	**464,920**	**5,252**
	4.1		Accepted County Plan Area*	187	5	577,170	187
		O'Neil Canyon	*3.1 Public or Private Recreation*	*6*			
			6.3 Highway Commercial	*53*		*577,170*	
			7.3 Heavy Industrial	*23*			
			8.5 Resource Mgmt (1 du/20 acres)	*103*	*5*		
			8.5 Resource Mgmt (1 du/80 acres	*2*	*0*		
	8.3		Extensive Agriculture (1 du/20 acres)	10	0		0
	8.3		Extensive Agriculture (1 du/80 acres)	54	0		1
	3.3		Other Facilities	1			1
	8.5		Resource Management (1 du/20 acres)	70	3		6
	8.5		Resource Management (1 du/80 acres)	15	0		0
	4.3		Specific Plan Required	70	0	762,300	70
	1.1		State or Federal Land	3			0
	Lebec/Headquarters			**410**	**8**	**1,339,470**	**265**
	DWR Disturbance (TCWD Beartrap Turnout)			**16**			**16**
Commercial/Residential Development Area (non-disturbance)	**Lebec/Headquarters - No Development Disturbance**			**145**			
Other Lands: Existing Non-Covered Uses	**Mining**			**2,636**			**0**
		National Cement		2,438			
		La Liebre Mine		198			
	Cemetery			**384**			
Other Lands: Not A Part	**NAP**			**3,870**			
			Kern County**	**141,886**	**3,632**	**1,804,390**	**5,533**

KERN COUNTY GENERAL PLAN BUILDOUT ALTERNATIVE

Land Use Designation				Acres	Dwelling Units	Square Feet
Open Space	**Existing Conservation Easement Areas**			**12,795**		
	Tejon Mountain Village Planning Area			**21,335**		
Commercial/Residential Development Area (Disturbed)	**TMV Planning Area**	**TOTAL**		**5,252**	**3,624**	**464,920**
	West of Freeway	4.1	Accepted County Plan Area	153	173	304,920
		8.3	Extensive Agriculture (1 du/20 acres)	17	1	
	TMV Specific Plan Area			5,082	3,450	160,000
	Oso Canyon			**492**	**160**	**49,005**
	Lebec/Existing Headquarters	**TOTAL**		**265**	**8**	**1,339,470**
		3.3	Other Facilities	1		
		4.1	Accepted County Plan Area	187	5	577,170
		4.3	Specific Plan Required	70	0	762,300
		8.3	Extensive Agriculture (1 du/80 acres)	1	0	0
		8.5	Resource Management (1 du/20 acres)	6	3	
	TCWD Beartrap Turnout Improvement Project	**TOTAL**		**16**		
	Other Lands	**TOTAL**		**6,117**	**3,440**	**291,415**
		8.3	Extensive Agriculture (1 du/20 acres)	1,012	506	
		8.3	Extensive Agriculture (1 du/80 acres)	1,853	927	
		8.5	Resource Management (1 du/20 acres)	46	23	
		8.5	Resource Management (1 du/80 acres)	38	19	
		8.2	Resource Reserve (1 du/20 acres)	6	3	
		8.2	Resource Reserve (1 du/80 acres)	16	8	
		4.3	Specific Plan Required	3,138	1,950	291,415
		5.7	5 Gross Acres/Dwelling Unit Maximum	8	4	
Commercial/Residential Development Area (Non-Disturbed)	**Lebec/Existing Headquarters**	**TOTAL**		**145**	**0**	**0**
		1.1	State or Federal Land	3		
		8.3	Extensive Agriculture (1 du/20 acres)	10		
		8.3	Extensive Agriculture (1 du/80 acres)	53		
		8.5	Resource Management (1 du/20 acres)	64		
		8.5	Resource Management (1 du/80 acres)	15		
	Other Lands	**TOTAL**		**84,088**	**0**	**0**
		4.1	Accepted County Plan Area	0		
		8.3	Extensive Agriculture (1 du/20 acres)	9,096		
		8.3	Extensive Agriculture (1 du/80 acres)	72,332		
		8.5	Resource Management (1 du/20 acres)	405		
		8.5	Resource Management (1 du/80 acres)	1,502		
		8.2	Resource Reserve (1 du/20 acres)	56		
		8.2	Resource Reserve (1 du/80 acres)	683		
		5.7	5 Gross Acres/Dwelling Unit Maximum	14		
	Oso Canyon	**TOTAL**		**1,174**	**0**	**0**
Other Lands: Existing Non-Covered Uses	**Other Lands**	**TOTAL**		**3,020**	**6**	**0**
	National Cement Mine	8.3	Extensive Agriculture (1 du/20 acres)	102	5	
		8.4	Mineral and Petroleum	2,336		
	La Liebre Mine	4.3	Specific Plan Required	14	1	
		8.4	Mineral and Petroleum	184		
	Cemetery	8.3	Extensive Agriculture (1 du/20 acres)	5		
		4.3	Specific Plan Required	379		
Other Lands	**Other Lands**	**TOTAL**		**3,317**	**0**	**0**
		8.4	Mineral and Petroleum	3,221		
		3.3	Other Facilities	0		
		1.1	State or Federal Land	96		
Other Lands: Not a Part	**Other Lands**	**TOTAL**		**3,870**	**0**	**0**
			NAP	3,870		
TOTAL		TOTAL		141,886	7,238	2,144,810

4.1 EXISTING GP ENTITLEMENT

	Land Use Designation	AC	DU	SF	Net Disturbance area (ac)
	Kern County				
4.1	**Accepted County Plan Area***	**340**	**178**	**882,090**	**340**
Inside TMV Planning Area					
Frazier Park	*5.3 Max 10 Units/Net Acre*	*11*	*110*		
	5.4 Max 4 Units/Net Acre	*15*	*60*		
	5.8 Min 20 Gross Acres/Unit	*1*			
	6.2 General Commercial	*20*		*217,800*	
	8.3 Extensive Ag (1 du/20 acres)	*73*	*3*		
O'Neil Canyon	*3.1 Public or Private Recreation*	*25*			
	6.3 Highway Commercial	*8*		*87,120*	
Outside TMV Planning Area					
O'Neil Canyon	*3.1 Public or Private Recreation*	*6*			
	6.3 Highway Commercial	*53*		*577,170*	
	7.3 Heavy Industrial	*23*			
	8.5 Resource Mgmt (1 du/20 acres)	*105*	*5*		

NOT A PART GP ENTITLEMENT

	Land Use Designation	AC	DU	SF	Net Disturbance area (ac)
	Kern County				
4.1	Accepted County Plan Area*	2			
8.3	Extensive Agriculture (1 du/20 acres)	3,121	156		312
8.3	Extensive Agriculture (1 du/80 acres)	220	2		4
	General Commercial			0	0
6.3	Highway Commercial			0	0
	Intensive Agriculture (1 du/20 acres)		0		0
	Intensive Agriculture (1 du/80 acres)		0		0
8.4	Mineral and Petroleum	232			0
3.3	Other Facilities				0
8.5	Resource Management (1 du/20 acres)		0		0
8.5	Resource Management (1 du/80 acres)		0		0
8.2	Resource Reserve (1 du/20 acres)		0		0
8.2	Resource Reserve (1 du/80 acres)		0		0
	Rural Community (1 du/80 acres)				0
	Service Industrial				0
4.3	Specific Plan Required	216	212	127,978	216
1.1	State or Federal Land	79			0
	10 Dwelling Units/Net Acres Maximum		0		0
	2.5 Gross Acres/Dwelling Unit Maximum		0		0
5.7	5 Gross Acres/Dwelling Unit Maximum		0		0
	TOTAL	**3,870**	**370**	**127,978**	**532**

CEMETERY

	Land Use Designation	AC	DU	SF	Net Disturbance area (ac)
	Kern County				
4.1	Accepted County Plan Area*		0	0	0
8.3	Extensive Agriculture (1 du/20 acres)	5	0		0
8.3	Extensive Agriculture (1 du/80 acres)		0		0
	General Commercial			0	0
6.3	Highway Commercial			0	0
	Intensive Agriculture (1 du/20 acres)		0		0
	Intensive Agriculture (1 du/80 acres)		0		0
8.4	Mineral and Petroleum				0
3.3	Other Facilities				0
8.5	Resource Management (1 du/20 acres)		0		0
8.5	Resource Management (1 du/80 acres)		0		0
8.2	Resource Reserve (1 du/20 acres)		0		0
8.2	Resource Reserve (1 du/80 acres)		0		0
	Rural Community (1 du/80 acres)				0
	Service Industrial				0
4.3	Specific Plan Required	379	0	0	379
1.1	State or Federal Land				0
	10 Dwelling Units/Net Acres Maximum		0		0
	2.5 Gross Acres/Dwelling Unit Maximum		0		0
5.7	5 Gross Acres/Dwelling Unit Maximum		0		0
	Condor Study Area				
	Condor Study Area - 2 mile buffer				
	Not A Part - CSA				
	Not A Part - 2 mile buffer				
	Not A Part - outside 2 mile buffer				
	TOTAL	**384**	**0**	**0**	**379**

NATIONAL CEMENT

	Land Use Designation	AC	DU	SF	Net Disturbance area (ac)
	Kern County				
4.1	Accepted County Plan Area*		0	0	0
8.3	Extensive Agriculture (1 du/20 acres)	102	5		10
8.3	Extensive Agriculture (1 du/80 acres)		0		0
	General Commercial			0	0
6.3	Highway Commercial			0	0
	Intensive Agriculture (1 du/20 acres)		0		0
	Intensive Agriculture (1 du/80 acres)		0		0
8.4	Mineral and Petroleum	2,336			0
3.3	Other Facilities				0
8.5	Resource Management (1 du/20 acres)		0		0
8.5	Resource Management (1 du/80 acres)		0		0
8.2	Resource Reserve (1 du/20 acres)		0		0
8.2	Resource Reserve (1 du/80 acres)		0		0
	Rural Community (1 du/80 acres)				0
	Service Industrial				0
4.3	Specific Plan Required		0	0	0
1.1	State or Federal Land				0
	10 Dwelling Units/Net Acres Maximum		0		0
	2.5 Gross Acres/Dwelling Unit Maximum		0		0
5.7	5 Gross Acres/Dwelling Unit Maximum		0		0
	Condor Study Area				
	Condor Study Area - 2 mile buffer				
	Not A Part - CSA				
	Not A Part - 2 mile buffer				
	Not A Part - outside 2 mile buffer				
	TOTAL	**2,438**	**5**	**0**	**10**

LA LIEBRE

	Land Use Designation	AC	DU	SF	Net Disturbance area (ac)
	Kern County				
4.1	Accepted County Plan Area*		0	0	0
8.3	Extensive Agriculture (1 du/20 acres)		0		0
8.3	Extensive Agriculture (1 du/80 acres)		0		0
	General Commercial			0	0
6.3	Highway Commercial			0	0
	Intensive Agriculture (1 du/20 acres)		0		0
	Intensive Agriculture (1 du/80 acres)		0		0
8.4	Mineral and Petroleum	184			0
3.3	Other Facilities				0
8.5	Resource Management (1 du/20 acres)		0		0
8.5	Resource Management (1 du/80 acres)		0		0
8.2	Resource Reserve (1 du/20 acres)		0		0
8.2	Resource Reserve (1 du/80 acres)		0		0
	Rural Community (1 du/80 acres)				0
	Service Industrial				0
4.3	Specific Plan Required	14	1	0	14
1.1	State or Federal Land				0
	10 Dwelling Units/Net Acres Maximum		0		0
	2.5 Gross Acres/Dwelling Unit Maximum		0		0
5.7	5 Gross Acres/Dwelling Unit Maximum		0		0
	Condor Study Area				
	Condor Study Area - 2 mile buffer				
	Not A Part - CSA				
	Not A Part - 2 mile buffer				
	Not A Part - outside 2 mile buffer				
	TOTAL	**198**	**1**	**0**	**14**

Appendix C

Climate Change Effects and the TU MSHCP

CLIMATE CHANGE EFFECTS AND THE TEHACHAPI UPLAND MULTIPLE SPECIES HABITAT CONSERVATION PLAN

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CLIMATE CHANGE EFFECTS AND THE TEHACHAPI UPLAND MULTIPLE SPECIES HABITAT CONSERVATION PLAN

SECTION 1. INTRODUCTION

The purpose of the Climate Change Effects Appendix C is to support the Supplemental Draft EIS analysis by providing: (a) a broader regulatory discussion that supplements the Supplemental Draft EIS; (b) background information on the potential impacts of climate change on species generally; (c) support for and a general discussion of the literature regarding uncertainty and difficulty of reaching definitive conclusions regarding species' response to climate change; and (c) a qualitative assessment of the potential impacts of climate change to each Covered Species (which is applied to the analysis in the Supplemental Draft EIS). It is important to understand that Appendix C is not intended to provide a specific adaptive management strategy or make management recommendations for the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSCHP) Covered Lands. However, the analyses of climate change impacts on abiotic and biotic resources contained in Appendix C identifies potential climate change issues and will help establish the framework of adaptive management of the Covered Lands.

Appendix C includes a discussion of *A Framework for Categorizing the Relative Vulnerability of Threatened and Endangered Species to Climate Change* (referred to herein as the "Draft Framework") published by the Environmental Protection Agency (EPA) for public review on November 25, 2009 (74 FR 61671-61673). Appendix C does not formally apply the Draft Framework methods to the Covered Species, but relevant principles from the Draft Framework are applied to generally determine which Covered Species may be more or less vulnerable to climate change effects in order to support the impact analysis in the text of the Supplemental Draft EIS.

Appendix C is composed of the following main issues addressed in Sections 2 through 5:

- Section 2: Framework for regulation of greenhouse gases (GHGs) in the United States and California
- Section 3: Review of the projected and observed climate changes in California and their general effects on vegetation communities and native and introduced species, as well as a discussion of the inherent uncertainty in making precise predictions of climate change impacts
- Section 4: An approach to evaluating species' vulnerabilities to climate change
- Section 5: Potential climate change effects on abiotic and biotic resources and various taxonomic groups, with specific applications to Tejon Ranch, Covered Lands, and TU MSHCP Covered Species

1.1 Summary

This subsection summarizes the main topics of Appendix C. Each of these topics are discussed more fully below.

The 2009 *California Climate Adaptation Strategy* (CAS; California Natural Resources Agency 2009) identified both current changes in climate occurring in California and some resulting effects. Specifically, climate changes in California to date include: increased average temperature; more extreme hot days and fewer cold nights; seasonal shifts and lengthening of growing season; and shifts in precipitation patterns, with less snowpack and snowmelt and rainwater running off sooner. As a result, the CAS identified that California is currently experiencing the following effects, including: more frequent and intense wildfires; increased sea level by up to 7 inches over the 20th century; reduced water supply; and stress on infrastructure.

Future climate change impacts on Tejon Ranch, and specifically the Covered Lands on Tejon Ranch, cannot be predicted with a high level of certainty, but it is expected that Tejon Ranch will experience warmer temperatures, altered precipitation, and seasonal shifts and lengthening of the growing season. The potential effects of such changes, both directly from climate change and indirectly from the potential for more frequent and intense wildfires or droughts, for example, could include alterations in runoff patterns, hydrology, vegetation communities, microclimates, and microhabitats.

Numerous studies of the effects of climate change on biota have been conducted and comprehensive reviews, analyses, and integration of much of this research can be found in various sources (Hansen et al. 2001; McCarty 2001; Parmesan 2006, 2007; Parmesan et al. 2000; Parmesan and Yohe 2003; Walther et al. 2002). Parmesan (2006), for example, concluded that changes in phenology[1] and distribution of well-studied terrestrial, marine, and freshwater plant and animal species groups are occurring and are linked with local or regional climate change. These changes include severe contractions and extinctions of range-restricted polar and mountain-top species; disruptions of predator–prey and plant–insect relationships due to differential responses to warming; evolutionary adaptations to warming in the interior portions of species' ranges, and rapid change in species' resource use and dispersal at range margins; and genetic shifts.

Although there is general consensus among scientists that climate change is occurring and will have actual effects on biodiversity, ecosystem function, species, and habitats, there is currently a high degree of uncertainty about species- and habitat-specific effects of climate change, at least at a community, ecosystem, or regional level (California Natural Resources Agency 2009; Hansen et

[1] Phenology is defined as the "Study of the temporal aspects of recurrent natural phenomena and their relation to weather and climate" (Lincoln et al. 1998).

al. 2001; Hulme 2005; Mustin et al. 2007; Peterson et al. 2002; U.S. Fish and Wildlife Service (USFWS) 2009; Walther et al. 2002). Some species may exhibit substantial effects, and others may show no measurable effect (Parmesan and Yohe 2003; Visser and Both 2005). With such a high degree of uncertainty in projected climate change effects on species, there is currently an effort to understand what kinds of life history traits will make a species more or less sensitive to climate change and thus allow scientists to identify those species that are most vulnerable.

The EPA published a notice of public comment period for *A Framework for Categorizing the Relative Vulnerability of Threatened and Endangered Species to Climate Change* (or Draft Framework) on November 25, 2009 (74 FR 61671-61673). The Draft Framework describes a combined quantitative and qualitative method for evaluating threatened and endangered species' relative vulnerability to climate change (note that this evaluation emphasizes a species' *relative* vulnerability, not its *absolute* vulnerability to climate change). The Draft Framework identifies several factors that appear to distinguish species that are relatively more sensitive to climate change from species that are likely to be relatively less sensitive.

According to the Draft Framework, species that are most sensitive to climate change are those that are:

- Restricted in distribution (e.g., narrow endemic species)
- Small in population size
- Currently undergoing population declines
- Habitat specialists
- Found in habitats that are most likely to be affected by climate change.

Species that are least sensitive to climate change are those that are or have:

- Widely distributed
- Flexible habitat preferences
- Populations that are stable or increasing.

This appendix summarizes the main research findings for climate change effects for different taxonomic groups, including amphibians and reptiles, birds, mammals, insects, and plants. Each of the TU MSHCP species is then discussed in the context of these findings with respect to characteristics of the Covered Species that may make them more or less sensitive to climate change. It is important to understand that this analysis is qualitative and descriptive, and, in the absence of species-specific information, does not imply an absolute sensitivity of a particular species to climate change.

Covered Species that have life history traits or exhibit other factors (e.g., declining populations) consistent with species more sensitive to climate change include:

- Tehachapi slender salamander
- Yellow-blotched salamander
- Purple martin
- Tricolored blackbird
- Western yellow-billed cuckoo
- Willow flycatcher (both the little willow flycatcher and southwestern willow flycatcher subspecies)
- White-tailed kite
- Valley elderberry longhorn beetle
- Kusche's sandwort
- Round-leaved filaree
- Striped adobe lily.

Covered Species that have life histories or other factors that are consistent with less sensitivity to climate change compared to the species listed above include:

- Western spadefoot
- Coast horned lizard
- Two-striped garter snake
- California condor
- Least Bell's vireo
- Yellow warbler
- Ringtail
- Tehachapi pocket mouse
- Fort Tejon woolly sunflower
- Tehachapi buckwheat
- Tejon poppy.

Covered Species that have life histories and other factors that are consistent with species that are generally insensitive to climate change include:

- American peregrine falcon
- Bald eagle
- Burrowing owl
- Golden eagle.

Species that may be most sensitive to climate change tend to share in common characteristics such as narrow geographic ranges (including elevation ranges), specialized habitat requirements (e.g., preference for talus slopes by Tehachapi slender salamander), documented declining populations, or habitats that are most likely to be affected by climate change (e.g., wetland and riparian habitats).

Species that may be relatively less sensitive to climate change tend to be more variable with regard to higher and lower risk characteristics. For example, condors are long-lived and are mobile, opportunistic foragers, which are characteristics of lower risk species, but because they have a fairly restricted geographic range, occur in small populations in the wild, and their natural prey (e.g., deer) could be adversely affected by climate change, they could be more sensitive than other scavenger species with broader ranges and larger populations, such as the turkey vulture. As another example, the least Bell's vireo is a riparian species whose breeding habitat is somewhat restricted in California and is most likely to be affected by climate change. However, the vireo population is expanding in California and it has broader habitat requirements than the more restricted willow flycatcher, which may be relatively sensitive to climate change.

Species that likely are relatively insensitive to climate change tend to share common characteristics such as large geographic ranges encompassing a broad range of climate conditions, stable or increasing populations, flexible habitat and foraging requirements, or occupation of generally hotter and more arid environments (e.g., sparse grasslands, open scrub, and desert). For example, the burrowing owl has a broad geographic range (including extremely hot desert environments), its habitat (open grassland, pasture, desert) is unlikely to be substantially affected by a hotter and drier climate in California, and it is a generalist in its feeding habits (e.g., insects, small mammals, reptiles, birds, and carrion). Although burrowing owl populations may be declining due to several factors, including habitat loss, pesticide use, and introduced predators, it is unlikely that climate change would add to or exacerbate existing stressors.

Because specific effects of climate change on species and their habitats are still speculative and could change over time, both the State of California (California Natural Resources Agency 2009) and USFWS (2009) emphasize flexible, adaptive strategies for coping with climate change. Hulme (2005) states that adaptation strategies should focus on increasing the flexibility of managing vulnerable ecosystems and increasing the adaptability of vulnerable ecosystems and species. Management also needs to address interacting species and ecosystems. Halpin (1997) recommended the following management prescriptions to address climate changes:

1. Selection of redundant reserves and selection of reserves that protect habitat diversity
2. Management for buffer zone flexibility

3. Management for landscape connectivity
4. Management for habitat maintenance.

A discussion of the elements in relationship to the TU MSHCP is provided in Section 4.1, Biological Resources, of the Supplemental Draft EIS.

SECTION 2. REGULATORY FRAMEWORK FOR GREENHOUSE GASES

Regulation of greenhouse gases in the United States and California is relatively recent, beginning in the mid-2000s. In the absence of major Federal efforts, California has taken initiatives to establish goals for reductions of GHG emissions in California and to prescribe a regulatory approach to ensuring that the goals would be met. While not as comprehensive, the Federal government, primarily through actions of the U.S. Environmental Protection Agency (EPA), has also begun to regulate GHG emissions. This section provides a brief foundation for these regulatory efforts and discusses the key Federal and state regulatory efforts that could apply to development under the TU MSHCP and the inhabitants of such development. This discussion is broader ranging than the species-related text provided in Section 4.1, Biological Resources, of the Supplemental Draft EIS. It relates to the overall context of efforts to control and reduce GHG emissions. The success of these efforts will impact the future climate change models and scenarios, and ultimately the effects, as discussed below.

2.1 Federal Measures

Endangerment Finding

On December 7, 2009, the Administrator of the EPA signed a final rule establishing the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act (EPA 2009). The rule made two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act (42 U.S.C. 7401–7626):

- The Administrator found that elevated concentrations of GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the endangerment finding.
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the cause or contribute finding.

This rule was prompted by the U.S. Supreme Court case, *Massachusetts et al. v. EPA*, where the Supreme Court held that EPA has the statutory authority under Section 202 of the Clean Air Act to regulate GHGs from new motor vehicles because GHGs meet the Clean Air Act definition of an air pollutant. The court directed the Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA issued a final rule to require reporting of GHG emissions from all sectors of the United States economy. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2 equivalent[2] (CO_2E) per year will be required to report GHG emissions data to EPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, will be submitted to EPA in 2011. This new program will cover approximately 85 percent of the nation's GHG emissions and apply to roughly 10,000 facilities. EPA's new reporting system will provide a better understanding of GHG sources and will guide development of the best possible policies and programs to reduce emissions. The data will also allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective methods to reduce emissions in the future (EPA 2010a, 2010b).

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The Clean Air Act (CAA) established the Prevention of Significant Deterioration (PSD) and Title V programs, which apply to stationary sources that emit certain levels of regulated air pollutants (generally those pollutants for which EPA has established ambient air quality standards and their precursors or has established emission standards). On June 3, 2010, EPA published a final rule that tailors the applicability criteria that determine whether stationary sources and modification projects become subject to permitting requirements for GHG emissions under the PSD and Title V programs of the CAA (EPA 2010c). This rule establishes two initial steps of the phase-in and commits the agency to take certain actions on future steps addressing smaller sources, but it excludes certain smaller sources from PSD and Title V permitting for GHG emissions until at least April 30, 2016.

Under Step 1, effective January 2, 2011, only sources currently subject to the PSD permitting program would be subject to permitting requirements for their GHG emissions under PSD. For these projects, only GHG increases of 75,000 tpy or more of total GHGs, on a CO2E basis, would need to determine the Best Available Control Technology (BACT) for their GHG emissions. Similarly for the Title V program, only sources currently subject to the program due to their criteria air pollutant emissions would be subject to Title V requirements for GHGs. During Step 2 (July 1, 2011 to June 30, 2013), PSD permitting requirements will apply to new or modified facilities that

[2] Carbon dioxide equivalent (CO_2E) is used to compare the emissions from various greenhouse gases based on their emissions and global warming potential (GWP). In keeping with international reporting methods, CO_2E is generally reported in metric tons. The CO_2E for a greenhouse gas is derived by multiplying the mass of the gas by its associated GWP. For example, methane has a GWP of 21; thus, 1 metric ton of methane would be 21 metric tons CO_2E.

emit GHG emissions of at least 100,000 tpy CO2E and modifications at existing facilities that increase GHG emissions by at least 75,000 tpy CO2E. Facilities that emit 100,000 tpy CO2E or more will be subject to Title V permitting requirements. Under Step 2, PSD and Title V permitting requirements would apply to sources generating GHG emissions at the specified levels even if they do not exceed permitting thresholds for any other pollutant (EPA 2010d).

Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020; directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

EPA and NHTSA Joint Final Rule for Vehicle Standards

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule, effective July 6, 2010, to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016 (EPA and NHTSA 2010). The joint rule is intended to reduce GHG emissions and improve fuel economy. EPA is finalizing the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (EPA 2010e). This final rule follows the EPA and Department of Transportation's (DOT) joint proposal on September 15, 2009, and is the result of the President Obama's May 2009 announcement of a national program to reduce greenhouse gases and improve fuel economy (EPA 2010f).

The EPA GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 miles per gallon (mpg) if the automotive industry

were to meet this CO2 level all through fuel economy improvements. The CAFE standards for passenger cars and light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. Together, these standards will cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program. The rules will simultaneously reduce greenhouse gas emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA 2010f).

2.2 State Measures

The following legislation and Executive Orders established California's goals to reduce GHG emissions in the state and to respond to effects of climate change on the state's resources.

Executive Order S-3-05

In June 2005, former governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, GHG emissions should be reduced to 1990 levels by 2020, and GHG emissions should be reduced to 80% below 1990 levels by 2050.

AB 32 and Scoping Plan

On September 27, 2006, in furtherance of the goals established in Executive Order S-3-05, the legislature enacted Assembly Bill 32 (AB 32, Nuñez and Pavley), the California Global Warming Solutions Act of 2006. AB 32 requires GHG emissions to return to 1990 levels by 2020.

The California Air Resources Board (CARB) was assigned responsibility for developing and carrying out the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

The first action under AB 32 resulted in the adoption of a report listing early action GHG emission reduction measures on June 21, 2007. The early actions include three specific GHG control rules. On October 25, 2007, CARB approved an additional six early action GHG

reduction measures under AB 32. The original three adopted early action regulations meeting the narrow legal definition of "discrete early action GHG reduction measures" include:

1. A low-carbon fuel standard to reduce the "carbon intensity" of California fuels
2. Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants
3. Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early action regulations, which were also considered "discrete early action GHG reduction measures," include:

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification
3. Reduction of perfluorocarbons from the semiconductor industry
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products)
5. Require that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency
6. Restriction on the use of sulfur hexafluoride (SF_6) from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO_2E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources that fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities that emit CO_2 in excess of specified thresholds, and other facilities that emit CO_2 in excess of 25,000 metric tons per year from stationary combustion sources.

On December 11, 2008, CARB approved a Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29% below what would otherwise occur

in 2020 in the absence of new laws and regulations, referred to as "business as usual." The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations will occur over the next 2 years, becoming effective by January 1, 2012. The key elements of the Scoping Plan (CARB 2008) include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33%;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions;[3]
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

Executive Order S-13-08

On November 14, 2008, former governor Schwarzenegger issued Executive Order S-13-08, which is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. It directs the California Natural Resource Agency, in cooperation with the California Department of Water Resources, California Energy Commission, California's coastal management agencies, and the Ocean Protection Council to conduct public workshops to gather information and request the National Academy of Sciences to prepare a Sea Level Rise Assessment Report by December 1, 2010. The Business, Transportation, and Housing Agency was ordered to assess the vulnerability of the state's transportation systems to sea level rise

[3] In 2009, a coalition of environmental groups brought a challenge to the Scoping Plan alleging that it violated AB 32 and that the associated environmental review document violated CEQA by failing to appropriately analyze alternatives to the proposed cap-and-trade program. On May 20, 2011, the San Francisco Superior Court entered a final judgment in favor of the coalition. The Appellate Court stayed the Superior Court's injunction on June 3, 2011. Meanwhile, in an effort to comply with the Superior Court's Judgment, on June 13, 2011,CARB released a draft supplemental environmental document that analyzes alternatives to cap-and-trade. The portions of the Scoping Plan that do not relate to cap-and-trade remain valid under the Superior Court's judgment.

within 90 days of the order. The Office of Planning and Research and the California Natural Resources Agency are required to provide land use planning guidance related to sea level rise and other climate change impacts. The order also requires the other state agencies to develop adaptation strategies by June 9, 2009 to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. The final adaptation strategies report was issued in December 2009. To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. The report then recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

The following legislation and Executive Orders address California's goals to increase the amount of electricity produced by renewable energy sources.

SB 1078

Approved by former governor Davis in September 2002, Senate Bill 1078 (SB 1078, Sher) established the Renewal Portfolio Standard program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107 and Executive Orders S-14-08 and S-21-09.)

SB 107

Approved by former governor Schwarzenegger on September 26, 2006, Senate Bill 107 (SB 107, Simitian) requires investor-owned utilities such as Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric, to generate 20% of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017 (see SB 1078).

SB 1368

On September 29, 2006, former governor Schwarzenegger signed SB 1368, which requires the California Energy Commission to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local, publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission. On January 25, 2007, the California Public Utilities Commission adopted an Emissions Performance Standard for any long-term power commitments made by the state's electrical utilities. Utilities are not allowed to enter into a long-term commitment to buy baseload power from power plants that have CO_2 emissions greater than 1,100 pounds (0.5 metric ton) per

megawatt-hour (MWh). On May 23, 2007, the California Energy Commission also adopted a performance standard consistent with that adopted by the California Public Utilities Commission.

Executive Order S-14-08

On November 17, 2008, former governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency, through collaboration with the California Energy Commission and Department of Fish and Game, is directed to lead this effort. Pursuant to a Memorandum of Understanding between the California Energy Commission and Department of Fish and Game creating the Renewable Energy Action Team, these agencies will create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09

On September 15, 2009, former governor Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the California Public Utilities Commission and California Energy Commission to ensure that the regulation builds upon the Renewable Portfolio Standard program and is applicable to investor-owned utilities, publicly-owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and that can be developed most quickly in support of reliable, efficient, cost-effective electricity system operations.

Senate Bill X1 2

On April 12, 2011, Governor Jerry Brown signed SB X 1 2 in the First Extraordinary Session, which would expand the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources

to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for these utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the RPS for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

Title 24 Energy Efficiency and Building Standards

Title 24 of the California Code of Regulations, known as the California Building Standards Code, is a compilation of various standards applying to the construction and operation of residential and non-residential buildings in California. Title 24 is comprised of 12 parts. Part 6 of Title 24 is the California Energy Code, or the Energy Efficiency Standards for Residential and Nonresidential Buildings. The Energy Code was established in 1978 in response to a legislative mandate to reduce California's energy consumption, and it is updated periodically to incorporate additional energy-saving technologies and methods. Most recently, the California Energy Code was updated in 2008. The 2008 standards apply to all buildings for which a permit was submitted after January 1, 2010, and reflect additional attention to energy efficiency and GHG emission reduction.

The legislature also recently added Part 11 to Title 24, which comprises the California Green Building Standards Code, also known as CalGreen. CalGreen imposes a number of energy-saving and GHG-reducing requirements on California buildings, and contains a variety of voluntary measures that can also be required, which would enable buildings to qualify for special recognition.

The following legislation and Executive Orders address California's goals to reduce GHG emissions from motor vehicles and fuels.

AB 1493

Recognizing that the transportation sector accounts for more than half of California's CO_2 emissions, the California Legislature adopted Assembly Bill 1493 (AB 1493, Pavley), which was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EPA granted a waiver under the CAA on June 30, 2009, to allow this state regulation and on March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012 to 2016 model years (see EPA and NHTSA Joint Rule for Vehicle Standards). The revised regulations became effective on April 1, 2010. When

fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order S-1-07 sets a declining Low Carbon Fuel Standard (LCFS) for GHG emissions measured in CO_2-equivalent gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to replace 20% of the fuel used in motor vehicles with alternative fuels by 2020.

SB 375

On September 30, 2008, former governor Schwarzenegger signed SB 375 (Steinberg), which addresses GHG emissions associated with the transportation section through regional transportation and sustainability plans. By September 30, 2010, CARB will assign regional GHG reduction targets for the automobile and light truck sector for 2020 and 2035. The targets are required to consider the emission reductions associated with vehicle emission standards (see AB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a Sustainable Communities Strategy within the Regional Transportation Plan. The goal of the Sustainable Communities Strategy is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If a Sustainable Communities Strategy is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for “transit priority projects,” as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the Sustainable Communities Strategy or Alternative Planning Strategy.

2.3 CEQA-Related Developments

At the state and regional level, various regulatory developments have occurred in the context of conducting environmental reviews of potential projects pursuant to the California Environmental Quality Act (CEQA). These developments have centered largely around developing a methodology for determining whether a project's climate change impacts are significant. Although NEPA and CEQA share many general characteristics, including their overall goals of disclosure and consideration of potential environmental impacts, the specific requirements of the two statutes are different. In particular, CEQA requires identification of significance thresholds and a determination of significance, whereas NEPA requires that the magnitude of the impact be analyzed, but does not compel a determination of significance. Nevertheless, because the regulatory landscape with respect to climate change analysis under CEQA generally has unfolded more rapidly than it has under NEPA, consideration of some of the major GHG analysis developments under CEQA is warranted. The following discussion describes some of the most relevant developments. This discussion is not exhaustive and is not intended to represent a comprehensive picture of all GHG-related CEQA developments.

Senate Bill 97 (CEQA Guidelines)

SB 97 required the Governor's Office of Planning and Research (OPR) to prepare amended CEQA Guidelines for submission to the California Natural Resources Agency (CNRA) regarding GHG analysis and feasible mitigation of the effects of GHG emissions as required by CEQA. The CNRA was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. On December 30, 2009, the CNRA adopted the amendments to the CEQA Guidelines developed by OPR (CEQA Amendments). The CEQA Amendments became effective on March 18, 2010. Key elements of the CEQA Amendments are discussed below.

According to Section 15064.4(a) of the CEQA Amendments, lead agencies should "make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The revisions to Appendix G, *Environmental Checklist Form*, which is often used as a basis for CEQA lead agencies' selection of significance thresholds, do not prescribe specific thresholds. Rather, Appendix G asks whether the project would conflict with a plan, policy or regulation adopted to reduce GHG emissions; or generate GHG emissions that would significantly effect the environment, indicating that the determination of what is a significant effect on the environment should be left to the lead agency.

Accordingly, the CEQA Amendments do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Amendments emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA.

California Air Resources Board CEQA Guidance

CARB, which is the principal California state agency charged with GHG reduction efforts under AB 32, has not proposed, recommended, or adopted a CEQA significance standard for GHG for residential, commercial, mixed use, resort, or similar land use projects. In October 2008, CARB released a preliminary draft proposal for identifying CEQA thresholds of significance for industrial, commercial, and residential developments. The draft CARB thresholds proposed a framework for developing thresholds of significance that relied upon the incorporation of a variety of performance measures to reduce GHG emissions associated with a project, as well as a numerical threshold of significance above which a project must include detailed GHG analysis in an EIR and incorporate all feasible mitigation measures. Although CARB proposed a 7,000-tons-per-year threshold for industrial projects, no numerical threshold for commercial and residential projects was proposed. This process has not progressed since late 2008, and it is considered to be on hold.

San Joaquin Valley Air Pollution Control District CEQA Guidance [4]

In December of 2009, the San Joaquin Valley Air Pollution District (SJVAPCD) adopted, *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD CEQA Guidance; SJVAPCD 2009a), and issued an accompanying staff report further describing its adopted approach entitled *Final Staff Report: Addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act* (SJVAPCD Staff Report; SJVAPCD 2009b). The SJVAPCD CEQA Guidance is intended to

[4] The SJVAPCD is one of a few air districts that has formally adopted guidance, including significance thresholds, for evaluating GHG emissions from projects under CEQA. The East Kern Air Pollution Control District has not adopted or proposed such guidance.

assist lead agencies in their CEQA analysis of the climate change impacts from a development project; it is not compulsory and is intended for use specifically in the CEQA context. The SJVAPCD CEQA Guidance recognizes that determining a specific quantitative threshold above which a project's climate change impacts are significant is not scientifically possible and that impacts must be considered in a cumulative context.

The SJVAPCD CEQA Guidance, therefore, suggests that a lead agency determine that a development project's GHG impacts are less than significant if it: (1) is exempt from CEQA; (2) complies with an approved GHG emission reduction plan or GHG mitigation program for the geographic area in which the project is located; (3) implements best performance standards (BPS) that reduce project emissions by at least 29 percent below business as usual (BAU)[5] consistent with the required emission reductions determined by CARB to achieve the goal set by AB 32; or (4) does not implement BPSs, but demonstrates that a project's emissions would be reduced by at least 29 percent below BAU. SJVAPCD 2009a, pp. 4-5. SJVAPCD's performance standard approach is consistent with the statements of numerous experts and regulators that have recognized that a specific number cannot be identified, above which a project's impacts would significantly contribute to climate change, and that specific impacts cannot be attributed to a particular project. The SJVAPCD is now in the process of further refining the methodology to be utilized in undertaking a CEQA analysis of GHG emissions, and developing the BPSs to be applied to development projects.[6]

[5] BAU represents the emissions that would otherwise result in the absence of regulatory requirements or project commitments.

[6] It should be noted that, although the SJVPACD had not yet formally adopted this Guidance when the Tejon Mountain Village EIR was prepared, the EIR did employ a significance approach consistent with the approach ultimately recommended by the SJVAPCD. Accordingly, the Tejon Mountain Village EIR requires the project to mitigate its GHG emissions by at least 29 percent below BAU.

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SECTION 3 REVIEW OF CLIMATE CHANGE AND EFFECTS

This section provides background information for observed and projected climate change in California and the observed and potential effects of these changes on broad scale abiotic and biotic resources in the state. A general review of the potential effects of climate change on biotic systems, including vegetation communities and wildlife and plant species, and its relation to introduced species that may affect native species and ecosystem function is provided, with application to California where possible. This section also includes a discussion of the uncertainty of climate change projections and its specific effects on biotic systems and species. Thus, while a range of potential climate change effects may be identified, the exact impact of climate change on a specific species in a specific location remains speculative. The information provided in this section is applied to the Covered Lands and Tejon Ranch in general in Section 5.

3.1 Projected Climate Change and Effects in California

The *2009 California Climate Adaptation Strategy* (CAS; California Natural Resources Agency 2009) identified several physical climate change effects that are currently occurring in California:

- Increased average temperature
- More extreme hot days and fewer cold nights
- Seasonal shifts and lengthening of growing season
- Shifts in precipitation patterns, with less snowpack and snowmelt and rainwater running off sooner.

The CAS identified several consequences related to the observed climate changes, including:

- More frequent and intense wildfires
- Increased sea level by up to 7 inches over the 20th century
- Reduction in water supply
- Stress on infrastructure.

The CAS also identified several projected future effects of climate change based on information developed by the Intergovernmental Panel on Climate Change (IPCC) (2007). These projected effects are uncertain because they depend on several assumptions of the various climate models, levels of future emissions, and uncertainty related to societal choices and policies (e.g., business as usual or cooperative efforts to reduce GHGs). (Uncertainty in climate change scenarios and effects is discussed in more detail below in Section 3.4.) The projected future effects identified by CAS (California Natural Resources Agency 2009) that would occur under most climate change scenarios include:

- Temperature rise:
  - 2°F to 5°F by 2050; 4°F to 9°F by 2100
  - More pronounced warming in summer than winter
  - More pronounced warming inland than in coastal areas
  - All models predict increased temperatures, with level of GHG emissions the biggest uncertainty.
- Extreme weather events:
  - More frequent and longer heat waves
  - More frequent and more intense wildfires
  - Prolonged drought
  - Increased winter and spring flooding due to more rain relative to snow, and earlier snowmelt.
- Precipitation changes:
  - 12% to 35% reduction by 2050
  - High uncertainty due to different models of where and how much snowfall and rain patterns will change
    - 11 of 12 precipitation models show overall decreases in rainfall in northern California (12% to 35%)
    - More water will fall as rain than as snow, affecting runoff patterns (earlier snowmelt).
- Seasonal shifts
- Sea level rise:
  - 12 to 18 inches by 2050; 21 to 55 inches by 2100
- Generally hotter and drier conditions
- Potential abrupt climate change:
  - Although most models project gradual changes, tipping or threshold events could cause rapid or abrupt changes both globally and in California due to events elsewhere such as reduction in Arctic sea ice; accelerated melting of Greenland and Antarctic ice sheets; release of methane from permafrost; warming of the Amazon and intensification of El Nino/Southern Oscillation Cycles. Such threshold events could accelerate the projected changes and reduce the time available for resources to adapt to such changes (e.g., elevational or latitudinal range shifts). Species with lower dispersal capabilities or more restricted tolerances (e.g., thermal tolerances) to habitat changes would be at the greatest risk of extinction.

Potential future climate change impacts on Tejon Ranch, and specifically the Covered Lands on Tejon Ranch, include warmer temperatures, altered precipitation, and seasonal shifts and

lengthening of the growing season. The potential effects of such changes, both directly from climate change and indirectly from more frequent and intense wildfires, include alterations in runoff patterns, hydrology, vegetation communities, microclimates, and microhabitats. Although these types of impacts are expected to occur, the existing climate change models do not have the precision to make site-specific predictions such as the magnitude and direction of the effects (e.g., more or less precipitation). Thus, these changes are accommodated for in the TU MSHCP Section 8.1, Changed Circumstances, and TU MSHCP Section 8.3, Reconciliation of the No Surprises Rule, Unforeseen Circumstances, and Adaptive Management in the MSHCP.

3.2 Climate Change Effects on Biology

The general relationships between climate and biology have been studied for more than 100 years (Parmesan 2006). The more formal study of the potential impacts of climate change on biological diversity dates back to at least 1988 at the World Wildlife Fund's Conference on Consequences of the Greenhouse Effect for Biological Diversity (Peters 1992). This was the first scientific meeting to specifically focus on the effects of global warming on biodiversity (Peters 1992). A series of papers published in Peters and Lovejoy (1992) addressed a variety of topics regarding global warming effects on the environment, including effects on coastal-marine zones (Ray et al. 1992); vegetation (Woodward 1992); soil biotic communities and processes (Whitford 1992); tropical forests (Hartshorn 1992); ecosystem response, habitat change, and wildlife diversity (Shugart and Smith 1992); ecological, physiological, and behavioral responses by animals (Dawson 1992; Myers and Lester 1992; Rubenstein 1992; Tracey 1992); and host-parasite and disease-vector relationships (Dobson and Carper 1992). Since these seminal papers, a substantial body of research has been generated to address global warming, now more generally referred to as global climate change. Comprehensive reviews, analyses, and integration of much of this research can be found in various sources (Hansen et al. 2001; McCarty 2001; Parmesan 2006, 2007; Parmesan et al. 2000; Parmesan and Yohe 2003; Walther et al. 2002).

3.2.1 Species Effects

The data regarding the phenology and distribution of well-studied terrestrial, marine, and freshwater plant and animal species groups show that ecological changes are occurring and that these changes are consistent with predictions of global warming (Parmesan 2006; Walther et al. 2002). Parmesan (2006) concluded that specific changes were linked with local or regional climate change, including: severe contractions and extinctions of range-restricted polar and mountain-top species; disruptions of predator–prey and plant–insect relationships due to differential responses to warming; evolutionary adaptations to warming in the interior portions of species' ranges, and rapid change in species' resource use and dispersal at range margins; and genetic shifts. Parmesan and Yohe (2003) estimated that 41% of the species examined (655 of

1,598) exhibited climate change-related impacts. Parmesan (2006) found that amphibian groups have been highly negatively affected by climate change. In a study of 1,700 species, Parmesan and Yohe (2003) demonstrated average latitudinal shifts in species' ranges toward the Earth's poles of 6.1 kilometers (3.8 miles), and advancement of spring shifts of 2.3 days per decade for all species analyzed. Most projections of range shift are based on smaller-scale observation within portions of a species' range boundary, but entire range shifts by amphibian and butterfly species have been observed (Parmesan 2006). Elevational range shifts also may occur, with studies showing a general upward movement, such as lowland birds in Costa Rica beginning to breed in montane cloud-forest habitat (Parmesan 2006; Walther et al. 2002).

One of the most frequently observed climate-related biological effects is the alteration of species' phenologies in relation to lengthening growing seasons in the Northern Hemisphere (Parmesan 2006). Parmesan (2006) cites research on amphibians showing 10- to 13-day advances in calling phenology of six frog species in upstate New York in a comparison of 1900 to 1912 and 1990 to 1999 records, and 1- to 3-week advances per decade in amphibian breeding in England. More specific examples of species' phenological alterations in relation to climate change are discussed below with regard to taxonomic groups, including studies of species occurring in California.

In addition, species-specific impacts of these climate change effects, there is also complexity in species' responses to climate change resulting from interactions across trophic levels (Hansen et al. 2001; Walther et al. 2002). These interactions result from differences in species in their physiological tolerances, life history strategies, probabilities of extinction and colonization, and dispersal capabilities (Parmesan et al. 2000; Parmesan 2006; Walther et al. 2002). Range shifts are expected to vary greatly among species due to their different dispersal capabilities (Hansen et al. 2001; Walther et al. 2002), but in general it is likely that dispersal rates will be slower than climate change effects (Hansen et al. 2001). It will be difficult or impossible for many species to shift their ranges as rapidly as climate change affects their habitat. The timing and synchrony of evolved life history strategies and relations between predator–prey, insect–host plant, and pollinators–flowering plants are particularly sensitive to climate change, but there are relatively few studies with sufficient information to address these impacts (Parmesan 2006).

A study in the Colorado's Rocky Mountains on a site which experienced a 1.4°C rise in temperature since 1965, but no change in snow cover, demonstrated a 14 day advancement in spring arrival by American robins (*Turdus migratorius*) from 1981 to 1999 (Inouye et al. 2000). As a result, the interval between the robin's arrival date and appearance of bare ground had grown by 18 days, potentially adversely affecting the availability of food sources upon arrival. This study also documented that yellow-bellied marmots (*Marmota flaviventris*) are emerging from hibernation 38 days earlier, apparently from warmer spring temperatures, when there is still snow

cover and no plants are available to eat. This decoupling of emergence and food availability may increase the energetic cost of maintaining body temperature in the absence of food, resulting in increased stress and potentially decreasing reproductive success (Inouye et al. 2000).

To date, most studies have been correlational or circumstantial in linking species impacts to climate change. The mechanisms or causal factors of climate change responses are not well studied or understood. These kinds of potential climate change effects also illustrate the complexity and species-specific nature of species' responses to climate change, resulting in a high level of uncertainty of how species will respond to climate change. This uncertainty is discussed more fully in Section 3.4 of this appendix. Although there is uncertainty in making precise species-specific predictions (e.g., populations would decline by a certain percentage) and causal mechanisms are not well understood, the available information is adequate for making general assessments of the likely trajectory of species trends and identifying potential management needs on Tejon Ranch and the Covered Lands under certain assumptions about climate change effects.

The following sections review the climate effect literature for several taxonomic groups, including amphibians and reptiles, birds, mammals, insects, and plants. Section 5 of this appendix discusses in detail potential climate change impacts on TU MSHCP Covered Species.

Amphibians and Reptiles

Amphibians and reptiles, as ectotherms (environmental air temperature affects body temperature), are strongly influenced by environmental conditions and as a group are likely to be relatively sensitive to climate change (Lawler et al. 2010b; Walther et al. 2002). Examples of climate-related amphibians and reptile responses and issues include:

- Physiological responses including reproduction, sex determination, and development
- Impacts on habitat quality
- Changes in breeding behaviors such as chorusing and spawning
- Range shifts, contractions and expansions
- Change in species richness
- Interactions between climate change and other stressors such as UV radiation, diseases and pathogens, and contaminants

Environmental conditions affect their reproduction, development, spatial distribution, and interactions with other species (Walther et al. 2002). The reproductive physiology of amphibians and reptiles, including egg and sperm development, is affected by both temperature and humidity, which then affects population dynamics (Walther et al. 2002). The sex of many

reptiles, for example, is determined by the maximum temperature experienced during critical phases of embryonic development. Warmer maximum temperatures could therefore have a profound effect on sex ratios and population dynamics of reptiles, especially if occurring in smaller populations in fragmented habitats where adaptations to restore appropriate sex ratios may be more difficult (Parmesan et al. 2000).

Climate change may also affect microclimates and hydrology that could affect habitat for amphibians, including stream flows, lake depths, amount and duration of winter snows, pond hydroperiods, and soil moisture (Lawler et al. 2010b).

Climate change is linked with earlier choruses and spawning by amphibians (Parmesan 2007; Walter et al. 2002), and amphibians have a significantly stronger shift to earlier breeding than other taxonomic groups (Parmesan 2007). Some, but not all, amphibian species in Britain are breeding earlier, which has altered trophic interactions (Walther et al. 2002). Examining breeding data dating back to as early as 1967, Blaustein et al. (2001) reported earlier breeding by western toad (*Anaxyrus boreas*) at one site in Oregon, but failed to document earlier breeding at four sites by western toad and Cascades frog (*Rana cascadae*), spring peeper (*Pseudacris crucifer*) in Michigan, and Fowler's toad (*Anaxyrus fowleri*) in Ontario, Canada. However, breeding time in western toad, Cascades frog, and spring peeper was positively correlated with warmer temperatures. Fowler's toad breeding showed no relationship to warmer temperatures, but did show a statistically insignificant trend toward later breeding.

These data indicate that amphibian responses to climate change likely are variable and differ for unknown reasons. Blaustein et al. (2001) suggest that long-term data are needed to understand species' responses and potential management needs. Corn (2003) reanalyzed the Oregon western toad data used by Blaustein et al. (2001) and incorporated temperature and snow data from automated and manual snow survey stations much closer to the study sites than the weather station used in the Blaustein et al. (2001) study. Corn (2003) indicates that weather in mountain habitats can vary over small spatial scales and that weather data from stations far from sites (up to 32 kilometers (19.8 miles) and 1,070 meters (3,500 feet) lower in elevation in the Blaustein et al. study) may not be representative of weather conditions at the sites. Corn (2003) found significant correlations between dates of breeding and snow accumulation and temperature and suggests that winter snow accumulation is a better predictor of breeding phenology in montane amphibians.

Modeling of amphibian distributions in relation to climate change has yielded variable results. Lawler et al. (2010b) examined the potential climate change effects on the distribution of 413 amphibian species in the western hemisphere (i.e., North, Central, and South America) using 20 climate simulations for the period 2071 to 2100 and concluded that major shifts in amphibian faunas will occur in the future. They found species turnover of 10 to 20 percent with a lower

GHG emissions scenario and at least a 30 percent turnover with a higher emissions scenario, including a 50 percent turnover (reflecting the sum of local extirpations and colonizations resulting from range contractions and expansions, respectively) in the eastern United States. Generally, range shifts were species-specific, with several species showing poleward and elevational shifts in their ranges, but overall species showed about three times more range contractions than range expansions under both the lower and higher emissions scenarios. Based on Figure 3 of Lawler et al.'s study (2010b), it appears that Southern California is projected to have about 30 to 40 percent amphibian species turnover under the lower emissions scenario and more than 60 percent species turnover under the higher emissions scenario.

Other modeling efforts project somewhat different results for amphibian distributions in North America from those projected by Lawler et al. (2010b). Energy modeling of forest habitats by Hansen et al. (2001) and climate projections from general circulation models (Currie 2001) project that overall ectotherm species richness (including amphibians and reptiles) will increase throughout the coterminous United States with climate warming, with modest increases in the south and greater increases in the north. Currie (2001) suggests that amphibian richness is most likely to increase dramatically in cold, high-elevation areas, which is consistent with Lawler et al. (2010b) regarding elevation shifts for some species. However, it is unknown whether these potential beneficial effects of warming on amphibians and reptiles will counteract the negative effects currently contributing to population declines (Hansen et al. 2001). Arajuo et al. (2006) reported a similar, but qualified, conclusion for amphibians and reptiles in Europe. They concluded that a great proportion of amphibian and reptile species could expand their distributions if dispersal was unlimited due to warming of cooler northern regions and creation of suitable habitat for colonization. However, if species are unable to disperse (which is probably more realistic for amphibians and reptiles than other more mobile species), their ranges are projected to decline due to warming in the southwest of Europe, where temperatures would approach those of North Africa where few amphibians are present. Furthermore, reduced availability of water may offset projected range expansions even if the species were capable of dispersing.

Lawler et al. (2010b) discuss the uncertainty of such modeling efforts, which may occur for several reasons, including inaccurate maps of species' current ranges; complex biotic and interspecific interactions; uncertainties about the relationship between precipitation changes (including timing and magnitude in relation to temperature changes) and their species-specific ecological or physiological effects (e.g., changed timing of precipitation may affect some species but not others); and the difficulty of predicting future precipitation scenarios, especially for different regions. For example, decreased precipitation in an area during one season may be offset by increased precipitation in the same area in a different season.

Amphibians are considered to be declining faster globally than either birds or mammals, and it is estimated that 48% of the declining species are being affected by unidentified processes other than habitat loss and overutilization (Stuart et al. 2004). These global declines have been attributed to a variety of factors, including climate change, increased exposure to ultraviolet radiation (UV-B), and increased prevalence of disease (Kiesecker et al. 2001), and it is expected that complex interactions of several anthropogenic factors are involved (Collins and Storfer 2003). Collins and Storfer (2003) classify UV-B radiation, global climate change, contaminants, and emerging infectious diseases as poorly understood potential factors in amphibian decline likely having multiple ecological and evolutionary variables and interactions. Using observational data and field experimentation, Kiesecker et al. (2001) examined the relationship between precipitation, UV-B exposure, and infection by a pathogenic oomycete (*Saprolegnia ferax*) (a water mold) on breeding by western toad in Oregon. They found that climate-induced reductions in precipitation reduced water depth at oviposition sites, which increased embryo exposure to higher UV-B levels, making them more susceptible to infection by *S. ferax* and increasing mortality. Kiesecker et al. (2001) suggest that the intensification of ENSO cycles may have increased the incidence and severity of *S. ferax* outbreaks.

The potential causes of amphibian declines in California were examined by Davidson et al. (2002). Using logistic regression models, they tested hypotheses for declines due to pesticide drift, habitat destruction, UV-B, and climate change (including precipitation effects) for eight species: California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondii*), arroyo toad (*Anaxyrus californicus*), Yosemite toad (*Anaxyrus canorus*), California red-legged frog (*Rana draytonii*), Cascades frog, foothill yellow-legged frog (*Rana boylii*), and Sierra Nevada populations of the mountain yellow-legged frog (*Rana muscosa*). The ranid frogs—California red-legged frog, foothill yellow-legged frog, Cascades frog, and mountain yellow-legged frog—all showed significant declines associated with upwind agriculture that could be sources of pesticides. Decline of the two lowland vernal pool-associated amphibians—California tiger salamander and western spadefoot toad—were associated most strongly with habitat loss due primarily to urbanization and, to a lesser extent, agriculture. While declines in arroyo toad were related to urbanization and agriculture, Davidson et al. (2002) suggest that the decline of this species is more likely related to other types of habitat impacts, such as recreation impacts on streams, modification of flow regimes, and gravel mining. UV-B radiation and climate change were not good predictors of declines for any of the species. Seven of the eight species showed higher elevations at occupied sites where UV-B radiation would be highest—a finding opposite from expected. With regard to climate change, only western spadefoot showed relatively greater declines at southern and lower elevation sites, as predicted by the climate change hypothesis, but these variables were not significant in the logistic regression analysis; declines appear to be primarily due to habitat degradation.

Bosch et al. (2006) examined the potential relationship between the chytridiomycete fungus (*Batrachochytrium dendrobatidis*) and climate change (the climate-linked epidemic hypothesis) on amphibian declines in a montane area of Spain. They demonstrated a significant relationship between rising temperature and the occurrence of chytrid-related disease that has caused declines of the midwife toad (*Alytes obstetricans*), fire salamander (*Salamandra salamandra*), and common toad (*Bufo bufo*). Local weather variables are driven by general circulation patterns (primarily the North Atlantic Oscillation) and the projected climate pattern in the region includes a higher number of sunnier and hotter days, moderation of low temperatures, and a shorter winter season.

Birds

Among animal taxa, the link between climate change and animal responses is most well documented in birds because birds are popular and easily identified (Walther et al. 2002). Examples of climate-related bird responses include:

- Shifts to earlier spring activities such as arrival of migrants, first singing and breeding
- Changes in breeding patterns in relation to precipitation patterns (i.e., drought and wet cycles)
- Latitudinal and elevational range shifts
- Changes in species richness
- Genetic and behavioral adaptations to climate change

Although there is both geographic and species-specific variation, the most common changes in birds noted since the 1960s are progressively earlier spring activities such as breeding, first singing, and arrival of migrants (Butler 2003; Dunn and Winkler 1999; Inouye et al. 2000; Jonzén et al. 2006; Murphy-Klassen et al. 2005; Torti and Dunn 2005; Walther et al. 2002). Inouye et al. (2000), for example, found that American robins arrived 14 days earlier at the Rocky Mountain Biological Laboratory in Colorado than in 1981. Jonzén et al. (2006) documented advanced migration in both long- and short-distance migrant birds in Europe, with long-distance migrants showing more advancement of migration. Butler (2003) found that 103 North American migrants arrived earlier in New York and Massachusetts in the period from 1951 to 1993 compared to 1903 to 1950. Birds wintering in the southern United States arrived on average 13 days earlier, and birds wintering in South America arrived on average 4 days earlier. Butler (2003) found that arrival advances were related to specific habitat types, with grassland breeding species arriving on average 18 days earlier and forest species arriving on average fewer than 5 days earlier. Butler (2003) suggested that grassland birds predominantly are seed eaters and that seeds are available as soon as snow melts, whereas forest species are primarily insect eaters and insect phenology may not be as advanced. Butler (2003) also found that five bird species now overwinter in the Cayuga Lake Basin where they were previously unknown in the winter. Murphy-Klassen et al. (2005) found significantly altered arrival dates for 27 of 96

migrant bird species at the Delta Marsh in Manitoba, Canada, over a 63-year period. Over this period, average monthly spring temperatures increased 0.6°C to 3.8°C for February through May. Fifteen of the species showed a statistically significant relationship between arrival date and temperature. Dunn and Winkler (1999) demonstrated that tree swallows (*Tachycineta bicolor*) had advanced egg laying by 9 days between 1959 and 1991 and that this advance was related to surface air temperatures at the time of laying. Torti and Dunn (2005) found that advances in breeding activity by North American birds, however, are variable both among and within species, indicating different sensitivities to climate change. Torti and Dunn (2005) suggest that differential responses to climate change may be related to body mass, with smaller species more affected than larger species. However, they also suggest that diet may play a role, which is consistent with Butler's (2003) observation of earlier arrivals of grassland granivores (seed eaters) compared to forest insectivores (insect eaters).

Earlier breeding activity in seven common riparian bird species in relation to increased spring temperatures has been demonstrated in a 20-year study in central Arizona (Martin 2007). Martin (2007) found that advanced breeding did not directly affect starvation of young or clutch size. The breeding season of single-brooded species was not extended, but it was for multi-brooded species. The seven species showed variable responses to climate change. Populations of three of the seven previously common species (green-tailed towhee [*Pipilo chlorurus*], orange-crowned warbler [*Vermivora celata*], and red-faced warbler [*Cardellina rubrifrons*]) exhibited climate-related declines. One species (MacGillivray's warbler [*Oporonis tolmei*]) became locally extinct due to a decline of canyon maple (*Acer grandidentatum*). These negative effects occurred due to decreased abundance of preferred habitat (deciduous vegetation) and increased nest predation rates. Less summer precipitation over time also was associated with increased nest predation. One species (gray-headed junco [*Junco hyemalis caniceps*]) showed strong increases, and two species (Hermit thrush [*Catharus guttatus*] and Virginia warbler [*Vermivora virginiae*]) showed no detectable change. Complicating the trophic relationships, the deciduous vegetation decline was attributed to increased browsing by elk (*Cervus elephus*), which were able to stay at higher elevations due to a decline in snow accumulation. Thus, the effect of climate on the breeding habitat was mediated by an increase in the abundance of a primary ungulate consumer rather than a direct effect on the habitat (Martin 2007).

Species-specific effects of advanced migration are poorly understood, but breeding activity is the most demanding period of the avian life cycle, and synchrony with food resources is essential (Visser and Both 2005). Changes in spring arrival times by birds can therefore have a decoupling effect of important ecological relationships. For example, in England a potential disruption of the timing of winter moth (*Operophtera brumata*) and oak bud burst may be causing a mismatch between moth availability and the peak food requirements by great tit (*Parus major*) nestlings

(Walther et al. 2002). Parmesan (2007) cautions that this link has not been definitively established, however, citing two studies with conflicting results regarding the synchrony of moth hatching and oak bud burst.

Many factors likely are involved in the relationship between climate change and migratory phenology, including photoperiod, local weather conditions, food availability at wintering, stopover and breeding sites, population numbers, physiological condition, molt, migratory speed, stopover frequency and duration, competition for resources, risk of mortality, and latitudinal distributions (Ahola et al. 2004; Gordo 2007; Jonzén et al. 2007; Marra et al. 2005; Vähätalo et al. 2004). The primary climate signal for spring activities by birds is spring temperature, but it may be modulated by photoperiod (amount of daylight), genetic regulatory factors, and/or population size (Walther et al. 2002). Autumnal changes in bird activities also are evident, but less consistently among bird species (Walther et al. 2002).

Hedenström et al. (2007) used two modeling approaches to investigate potential differential effects of climate on bird migration: the first approach took into consideration energetic factors such as flight speed and foraging to examine migration speed and stopover behavior; a second, more complex model looked at timing of migration, breeding, molt, and number of breeding attempts. With regard to migration speed, an important factor is whether a particular species is already migrating at maximum speed capacity based on the capacity to accumulate energy, which is apparent in some shorebirds, geese, and swans; increased speed of migration is not expected in these birds. Other species migrating below maximum capacity have the capacity to increase migration speed, such as smaller passerines (perching birds), which have been observed in both North America and Europe. The second model showed that departure from wintering sites was unchanged for species with a winter molt, but advanced for species with a summer molt. However, arrival on breeding sites was advanced for both groups. Timing and breeding and number of successful broods were also affected by spring advancement, while start of molt was unaffected. These models reveal complex interactions that are species-specific and strongly driven by how climate change is expected to affect seasonality, timing of maximal food supply, and the amplitude of resource curves. Depending on how these factors are combined in the model, a number of outcomes can be generated.

The timing and speed of avian spring migration must also be synchronous with food availability at stopover sites along the migration route and at the breeding site (Visser and Both 2005). Even if climate change had a consistent effect, albeit unlikely, on food availability along the route (i.e., food availability was synchronously accelerated along the route and at the breeding site), species for which photoperiod triggers migration would still risk a decoupling of migration and food availability; in such cases birds may arrive too late at stopover sites and on breeding ground to take advantage of peak prey productivity, as may be occurring with North American wood

warblers (*Parulidae*) that are missing the peak of caterpillar production (Visser and Both 2005). As noted above, American robins are arriving earlier than food sources are available in the Rocky Mountains in Colorado (Inouye et al. 2000). Nooker et al. (2005) found that for breeding tree swallows in Wisconsin, greater insect abundance was associated with shorter incubation periods and laying earlier, heavier eggs.

Changes in precipitation patterns may also affect some bird species. For example, subordinate females of the Galapagos mockingbird (*Nesomimus parvulus*) breed opportunistically in wet years when food resources are high (Parmesan et al. 2000). Drier climates presumably would reduce such opportunistic breeding, affecting breeding rates, genetics, and population structure (Parmesan et al. 2000).

Range shifts have also been documented for birds (Hitch and Leberg 2007; Lemoine et al. 2007a; Parmesan et al. 2000; Walther et al. 2002). Typically, in a given year distributions of bird species may vary in relation to weather, with distributions shifting north during warmer weather and south during colder weather (Parmesan et al. 2000). However, over time these "episodic" shifts may result in long-term range shifts (Parmesan et al. 2000). For example, lowland birds in Costa Rica are extending their distributions to higher areas, apparently due to changes in dry season mist frequency (Walther et al. 2002). Twelve bird species have shifted their distributions an average of 18.9 kilometers (11.7 miles) northward over a 20-year period due to warmer winter temperatures (Walther et al. 2002). Lemoine et al. (2007a) examined the regional abundance of 159 species of Central European birds for the 23-year period between 1980 and 2002. They demonstrated that while habitat availability was the most important factor in bird abundance changes in the first decade, latitudinal distribution was the most significant predictor of abundance changes in the periods from 1990 to 1992 and from 2000 to 2002. Over this 23-year period, winter temperatures increased 2.71°C, and summer temperatures increased 2.12°C. Lemoine et al. (2007a) concluded that climate change had overtaken land use changes as the most significant factor in determining distributions of Central European birds. Hitch and Leberg (2007) examined distributional North American Breeding Bird Survey data for 56 bird species for the periods between 1967 and 1971 and between 1998 and 2002 and found a northward latitudinal shift of 2.35 kilometers/ year (1.45 miles/year) by birds with southern ranges (i.e., species with a northern range boundary not north of approximately 44° North). A species of note showing northerly shift, and discussed below, is the willow flycatcher (*Empidonax traillii*).

Modeling of forest habitats by Hansen et al. (2001) and climate projections from GCMs (Currie 2001) project that bird species richness is expected to decrease overall throughout the coterminous United States with climate warming, with decreases in the south and no change or slight increases in the north. Modeling of breeding bird distributions in Africa and Europe using GCMs projected that by the late 21st century the range boundaries of many species will be

shifted by more than 1,000 kilometers (620 miles) (Huntley et al. 2006). Furthermore, this modeling projected that species with restricted ranges and/or those with specialized habitat requirements will be most severely affected, and that migrants will be affected at wintering, breeding, and migration stopover sites (Huntley et al. 2006). Based on an analysis of 21 census sites in Europe, Lemoine et al. (2007b) found that bird community composition and species richness have already changed in relation to climate change between 1968 and 2000 where temperatures have increased since 1980.

An important question regarding observed latitudinal and elevation range shifts is how such shifts may affect the extinction risk of species where these shifts may result in range contractions and loss of available habitat. Sekercioglu et al. (2008) modeled the effects of elevational limits on the extinction risks of landbirds, which comprise 87% of all bird species. Elevational ranges, four Millenium habitat loss scenarios, and surface warming of 2.8°C (an intermediate value for projected warming) projected an estimate of 400 to 550 landbird species extinctions, with 2,150 additional species at extinction risk by 2100. Of the species projected to become extinct, 79% are not currently considered to be threatened with extinction, and many are montane species because they will have nowhere to go. Generally, sedentary birds are at higher risk of extinction than migratory birds.

Another important factor in risk to species is their ability to adapt to climate changes, both behaviorally and genetically. Devictor et al. (2008) used a community temperature index (CTI), which reflects for a species community or assemblage the ratio of low- and high-temperature-associated species, to demonstrate that bird communities in France had shifted 91 kilometers (56 miles) northward between 1989 and 2006. However, the temperature increase had shifted 271 kilometers (168 miles) northward over the same time period, indicating that the bird communities were not tracking the temperature changes fast enough, thus potentially compromising their ability to adapt to climate change over the long term (Devictor et al. 2008).

Generally, the genetic responses of bird species to climate change are unknown, but a study by Møller and Szép (2005) demonstrated a microevolutionary response in a sexual secondary characteristic by the barn swallow (*Hirundo rustica*). This genetic response was linked to climate change on spring staging grounds in Algeria that reduced annual survival rates of males. Climate change increased selection pressures, and males with longer tails bred more successfully. Barn swallow tail feathers in males that provided a mating advantage increased by more than one standard deviation between 1984 and 2003 in a Danish population, thus demonstrating a very rapid microevolutionary response related to climate change (Møller and Szép 2005). Although this study demonstrates a relationship between climate change and a microevolutionary response for barn swallows, these results cannot be generalized to other species. Therefore, while it is acknowledged that genetic responses to climate may occur, without species-specific studies, the

potential for such changes to occur in the avian Covered Species as adaptations to climate change cannot be assessed without an understanding of how a particular species responds to different selection pressures.

Mammals

The potential impacts of climate change on mammals have not been studied to the same extent as amphibians, reptiles, and birds, but some potential climate-related responses by mammals are similar to these taxa, including:

- Changes in abundance and taxonomic community structure
- Impacts on reproduction such as timing of breeding, fertility, fecundity, development and juvenile mortality
- Latitudinal and elevational range shifts and contraction and expansions of ranges
- Genetic and behavioral changes
- Rates of disease transmission

Climate change may affect mammal communities by causing changes in: (1) relative abundance of individuals of a species, (2) taxonomic community composition resulting from local and global extinctions, and (3) species richness (Barnosky et al. 2003). Although such changes are natural events over geological time scales, an important question is whether projected warming would have a fundamentally different effect on future mammal community changes. Barnosky et al. (2003) used historic warming events and correlated assemblages of fossil mammals and projected warming events to investigate this question and found that while current climate-related mammal changes are consistent with the normal historic or background rate, with projected climate changes the warming rates will exceed the norms for mammalian history. A 1°C increase over a 100-year period would result in morphological alterations related to nutritional and other habitat changes in the environment, changes in relative abundance of species, expansion and contractions of species ranges, and population-level genetic changes. A 5°C increase over a 5,000-year period would result in global and local extinctions and immigrations, resulting in a clear change in taxonomic community composition.

Kerr and Packer (1998) used a GCM and the species-energy relationship to project future mammal species biodiversity in Canada, including which species are likely to shift ranges as temperatures increase, and which are likely to exhibit range contractions due to existing limitations on the northern extent of their range. Kerr and Packer (1998) project that the Arctic will experience the largest response by species and that southern regions of Canada will experience smaller responses related to smaller predicted temperature changes. Twenty-five mammal species have northern ranges bounded by the Arctic Ocean. Of these, Kerr and Packer

(1998) focused on the collared lemming (*Dicrostonyx groenlandicus*), considered to be a keystone species in the Arctic because of its importance as prey for many mammals and birds, and found that approximately 60% of this species' habitat could be lost with a 4°C warming.

Mammals may exhibit climatic limitations related to physiological processes, although for most species these limitations are unknown (Parmesan et al. 2000). In the Dulzura kangaroo rat (*Dipodomys simulans*), for example, body size is correlated with climate variability (Sullivan and Best 1997). Range shifts by two mammals in Canada - northward expansion by red fox, and range retreat by Arctic fox – have been linked with general warming (Walther et al. 2002). Climate extremes affect development, fecundity, and juvenile mortality of some large mammals such as red deer (*Cervus elephus*) and Soay sheep (*Ovis aries*) (Walther et al. 2002).

Similar to some birds, climate change is already affecting the spring phenology of some mammals. As noted above, marmots at the Rocky Mountain Biological Laboratory in Colorado are emerging from hibernation 38 days earlier when there is still snow cover and no plants are available to eat, resulting in increased energetic stress and potentially decreasing reproductive success (Inouye et al. 2000). Réale et al. (2003) found that red squirrel (*Tamiasciurus hudsonicus*) populations in southwest Yukon, Canada, had advanced breeding (parturition date) by 18 days over a 10-year period (6 days per generation) in relation to increasing spring temperatures (almost 2°C mandatory reporting requirements over a 27-year period) and food supply, and that this change was a plastic response to increased food supply and a microevolutionary (genetic) response to selection pressures.

Climate change has been implicated in local extinctions of at least one montane mammal. Beever et al. (2003) found that as of 1994–1999, pikas (*Ochotona princeps*) had apparently been extirpated from 7 of 25 populations in Great Basin mountain ranges reported earlier in the twentieth century. Using an information criterion model-selection method (Akaike's information criterion (AIC)), the best predictor of pika presence was the amount of talus. However, because talus area would remain constant over the time scale of the observations (less than 100 years), this variable cannot be a direct determinant of extinction (Beever et al. 2003). Maximum elevation of talus habitat was also an important predictor of pika persistence. Beever et al. (2003) suggest that warmer temperatures at lower elevations may be contributing to pika extirpations and at a rate more rapid than indicated by paleontological records. For example, extirpations occurred in three lower-elevation talus areas in close proximity to high-elevation populations. Beever et al. (2003) hypothesize that thermal stress affecting pikas could operate in several ways, including changing the composition and abundance of food source plants. Higher summer temperatures could reduce mid-day foraging, preventing sufficient gain in body mass or hay to overwinter; and/or higher summer temperatures may modify the thermal climate of the talus to a level that exceeds the pika's upper lethal temperature or interferes with its ability to thermoregulate.

In contrast to the adverse effects of climate change on mammal species such as the Artic fox and pika, other mammal species may benefit from climate change. Previtali et al. (2010) found that the degu (*Octodon degus*), a common rodent of semiarid northern Chile in South America, responded positively to wetter conditions during El Niño events, reaching record high densities and more stable populations related to changes in life-history parameters, such as adult survival, juvenile persistence, and fecundity. Previtali et al. (2010) suggest that if climate change results in increased frequency of El Niño events, degu populations could increase and its range may expand. Previtali et al. (2010) also suggest that such populations and/or range expansion could significantly affect other small mammals and plant species, thus having a cascading effect on other systems. Degus also can be agricultural pests and disease reservoirs (Previtali et al. 2010).

Disease transmission may be facilitated by extreme weather effects. Wet conditions result in high reproduction rates by deer mice (*Peromyscus maniculatus*), which is a carrier of Hantavirus, which is transmissible to humans and often lethal (Parmesan et al. 2000). As noted above, degus can also be disease reservoirs (Previtali et al. 2010).

Modeling of forest habitats by Hansen et al. (2001) and climate projections from GCMs (Currie 2001) project that overall mammal species richness is expected to decrease throughout the coterminous United States with climate warming, with decreases in the south, and with no change or slight increases in the north.

Insects

Insects are highly responsive to climate change effects because of their strong dependence on local conditions related to food availability. Examples of climate-related responses by insects and issues include:

- Larval development related to food sources
- Responses to extreme weather events
- Advanced timing of migrations and desynchrony with food production
- Interactions of habitat loss and climate change

In general, herbivorous insects and larval development are tightly tied to the availability of young plant material as food sources (Visser and Both 2005). Decoupling of this evolved relationship through climate change could result in starvation or reduced reproductive fitness.

Like birds, a relatively large body of distributional data is available for butterflies because they are popular and easy to identify. Documented phenological changes in butterflies include earlier appearances in the winter and spring and northward range shifts by 39 butterfly species in North

American and Europe by up to 200 kilometers (124 miles) over a 27-year period (Walther et al. 2002). Edith's checkerspot (*Euphydryas editha*) in the western United States and Mexico has shifted 124 meters (407 feet) in elevation and 92 kilometers (57 miles) northward since beginning of the 20th century (Walther et al. 2002). Many local extinctions of Edith's checkerspot have been associated with particular extreme weather events, such as the 1975–1977 drought in California that caused the extinction of 5 of 21 surveyed populations (Parmesan et al. 2000). Complicating predictions about specific climatic events on butterfly species is the observation of opposite responses of two subspecies of Edith's checkerspot to the same climate event. Following winters with 50% to 150% higher than average precipitation, populations of Bay checkerspot (*E. editha bayensis*) in the San Francisco area crashed while populations of quino checkerspot (*E. editha quino*) in northern Baja California, Mexico, boomed (Parmesan et al. 2000).

As a group, butterfly emergence or migratory arrival is advancing much earlier than first flowering of herbs, indicating the potential of increasing asynchrony or decoupling of insect–plant interactions (Parmesan 2007). A series of decouplings of important synchronized environmental events can have a devastating effect on butterfly populations (Parmesan et al. 2000). For example, low snowpack in the Sierra Nevada in one year (1991) led to an early emergence of the Edith's checkerspot in April before flowers were in bloom, resulting in most adults dying of starvation. The following year (1992), light snowpack resulted in early emergence of adults, which then died during a normal May snowfall. These consecutive-year events substantially reduced the local population. Two years later, unusually low June temperatures killed about 97% of the butterfly's host plant, and caterpillars starved to death. As of 1999, this population of Edith's checkerspot was still extinct.

McLaughlin et al. (2002) show that extinction of two Bay checkerspot populations was facilitated by increasing variability in precipitation in concert with habitat loss. McLaughlin et al. (2002) suggest that the variability in precipitation reduced the temporal overlap of larvae and plants, increasing larval mortality and population fluctuations. With reduced available habitat (due to invasion by non-native grasses and urban development), the Bay checkerspot is reduced to small insular populations unable to withstand local extirpations.

To investigate potential climate change effects on the endangered quino checkerspot butterfly, Preston et al. (2008) developed a climate-based niche model for larval host plants for the checkerspot; snapdragon (*Antirrhinum coulterianum*), and plantago (*Plantago erecta*). Abiotic variables in the model included average annual precipitation, average minimum low temperature in January, average maximum highest temperature in July, median elevation for one square kilometer, slope, and aspect. The niche model showed significant declines and fragmentation in the two annual checkerspot larval host plant species, and 100% loss of current occupied areas

with precipitation changes of ±50% compared with current precipitation levels. There was also shifting of habitat to the eastern portion of the currently occupied range and an upslope movement from the lower foothills to higher elevations in adjacent mountains.

While some native species may be adversely affected by climate changes, other species may benefit. Drought may facilitate population booms in insects such as beetles, aphids, and moths (Parmesan et al. 2000).

While these studies demonstrate climate change effects on insect species, they also emphasize that effects are likely to be site- and species-specific and that generalizing or predicting specific effects from one species (or even subspecies) to another must be done with caution. Such generalizations or predictions should be stated as hypotheses and supported with empirical evidence.

Plants

Plants are particularly sensitive to climate change because of their generally limited ability to disperse to more suitable habitats (invasive species excepted). Examples of climate-related responses by plants and issues included:

- Length of growing season
- Altered precipitation and hydrologic conditions
- Altered plant-insect relationships
- Limited dispersal capability, especially by endemic species

Climate change may affect plant species through changes in the length of the growing season, changes in temperature regimes that may exceed a species' tolerance, changes in precipitation, and more frequent and intense wildfires. It is expected that plant species adapted to wet, humid, and mesic environmental conditions would be affected by longer and more severe drought periods related to climate change more than species adapted to more arid conditions. At a community level, it is expected that mesic communities will convert to more xeric communities in some areas. Altered hydrologic conditions (e.g., earlier snowmelt, lower summer flows, drier spring and summer conditions, less groundwater, altered geomorphology, etc.) may affect species and community composition in wetland and riverine systems. Because plants are often dependent on highly co-evolved plant-insect relationships (e.g. pollination, seed dispersal), climate change has a high potential to decouple these important relationships (as noted above with the disconnect between butterfly emergence and host plant availability by Parmesan (2007)) and thus reduce plant productivity and biodiversity. Also, generally plants would be expected to be more limited in dispersal than wildlife and may be less able to effectively respond to climate change through range shifts.

The factors affecting the sensitivity of plants to these types of climate change effects generally should be similar to those identified in the Draft Framework for wildlife. That is, plant species that are narrowly distributed, are small in population size, are currently undergoing population declines, are habitat specialists (e.g., associated with certain soil types, microclimates, or microhabitats), and are found in habitats sensitive to climate change should all be relatively sensitive to climate change. Plant species that are widely distributed, have broad habitat requirements, or have populations that are stable or increasing should be less sensitive.

Based on two assumptions about GHG emissions (higher and lower), two global climate models, and two species dispersal scenarios (unrestricted movement and no movement), Loarie et al. (2008) estimated that up to 66% of California's endemic flora could experience more than 80% reduction in range size within a century under a scenario without dispersal. The general trend found in the study was that areas of high plant diversity tended to move north and towards the coast (Loarie et al. 2008). The study also found that species that presently have overlapping ranges may take different range shift trajectories in response to climate change, such as one species moving south to higher elevation and the other moving north, resulting in disjunct ranges and breaking up of the local flora (Loarie et al. 2008).

There is no species-specific information for the effects of climate change on the plant species covered by the TU MSHCP, but information on population sizes and distributions and general life history characteristics as they might relate to climate change are well enough understood to make some general conclusions about likely trends associated with climate change.

3.2.2 Vegetation Communities in California

This section discusses observed and projected climate change effects on vegetation communities in California. This background information is applied to Tejon Ranch and the Covered Lands in Section 5.1 of this appendix.

Climate change may result in direct and indirect changes in vegetation communities in California due to a variety of factors. Direct effects of climate change on vegetation communities may occur due to changes in the length of the growing season, tolerances to temperature regimes, and changes in precipitation. For example, plants in cooler environments generally tolerate shorter growing seasons than those in warmer environments (Woodward 1992). As growing seasons lengthen, it is expected that boundaries of the vegetation communities will shift both in latitude and elevation. Precipitation levels are related to leaf and plant biomass; for example, annual increases in precipitation of as little as 5 centimeters (less than 2 inches) can convert desert or sparse scrub to herbaceous vegetation with scattered trees (Woodward 1992). Conversely, prolonged drought would be expected to convert mesic vegetation communities to more xeric

communities at a local scale. A hotter and drier climate in California would facilitate expansion of deserts and grasslands, resulting in a loss of native plant diversity and an increase in non-native, invasive species (California Natural Resources Agency 2009).

Regional elevation shifts in xeric vegetation communities have been documented in California. A study in the Santa Rosa Mountains of southern California, for example, found that dominant species that are adapted to hot and dry desert conditions (e.g., creosote bush (*Larrea tridentata*), white bur-sage (*Ambrosia dumosa*), and brittlebush (*Encelia farinosa*) had shifted upward by about 65 meters between 1997 and 2006-2007 in association with increased surface warming, more variable precipitation and decreased snow (Kelly and Goulden 2008).

As discussed above, modeling of plant changes in response to climate change scenarios indicate a potential shift of high plant diversity to the coastal and northern regions of California and breaking up of local floral communities (Loarie et al. 2008). The implications of these findings for the Covered Lands are discussed in Section 5.1 of this appendix.

An indirect effect of climate change on vegetation communities is the lengthening of wildfire seasons and increases in wildfire intensities. The CAS (California Natural Resources Agency 2009) indicated an increase of 57% to 169% in the intensity of wildfires in California, which would result in vegetation alterations, such as converting shrublands to grasslands and increasing fine fuel loads, as well as altering fire characteristics, such as fuel continuity, frequency, and rate of spread. Increasing wildfire frequencies and intensity may also result in increased erosion of uplands and sedimentation of rivers and streams, altering natural geomorphological processes such as sediment transport and deposition. Along with altered hydrology due to the earlier snowmelt, altered geomorphological processes may affect regeneration of early successional riparian vegetation that depends on natural hydrology, flow events, sediment transport, point bar formation, seed dispersal, and tree regeneration (California Natural Resources Agency 2009).

With regard to forest systems, modeling of community types by Hansen et al. (2001) using climate models and known relationships between trees, climate, and soils projects several changes in forest communities in the western United States: potential habitat for Douglas fir (*Pseudotsuga menziesii*) will decrease along the Pacific coast but will expand east of the Cascade and Sierra Nevada ranges; the ranges of several subalpine conifers in the west, such as Engelmann spruce (*Picea engelmannii*) and mountain hemlock (*Tsuga mertensiana*), and several species of fir are projected to contract; and habitat for ponderosa pine (*Pinus ponderosa*) is expected to expand where other conifer species are contracting. The Sierra Nevada forests also are extremely sensitive to wildfire regimes, where fire frequency is related to fuel loads, temperature, and fuel moisture (Parmesan et al. 2000). Drought, in combination with extreme high temperatures and low humidity, is an ideal condition for intense wildfires.

Lenihan et al. (2003) used two general circulation models (GCMs) to project vegetation changes in California. One of the models (Hadley Climate Center HADCM2 or "HAD") projects a warmer and wetter California in the future. The other model (National Center for Atmospheric Research's Parallel Climate Model or "PCM") projects a hotter and drier California, consistent with the scenario reflected in the CAS (California Natural Resources Agency 2009). Although the two models project different precipitation scenarios, Lenihan et al. (2003) found that the response of vegetation classes to climate change was similar under the two models except for conifer forests. Generally, under the HAD model, advances of forest classes (alpine/subalpine forest, evergreen conifer forest, and mixed evergreen forest) would occur into the Modoc Plateau, the northern end of the Great Central Valley, and toward the higher elevation of the Sierra Nevada. Under the drier PCM, grassland would advance into the range of mixed evergreen woodland and shrubland as a result of a decline in the competitiveness of woody life-forms due to reduced rainfall and increased fire events.

Kueppers et al. (2005) used a regional climate model (RCM) to study the potential impact of climate change on distribution of blue oak, which is endemic to California and a relatively common woodland type on the Covered Lands. Kueppers et al. (2005) determined that the range of blue oak could decline by up to 59% and shift northward under the RCM model. This finding contrasts with a comparable GCM that projects a 73% retention of the existing range for the species. Kueppers et al. (2005) suggest that the different projections of the RCM and GCM are due to greater warming and larger precipitation decreases projected under the RCM compared to the GCM.

The implications of Lenihan et al. (2003) and Kueppers et al. (2005) findings for the Covered Lands are discussed in Section 5.1 of this appendix.

3.3 Introduced Species

Climate change may have direct adverse effects on native species and their habitats, as discussed above. However, climate change may also have adverse indirect effects resulting from the introduction of non-native, invasive species that compound the stress of climate change. The potential adverse effects of non-native species include herbivory, predation, disease, parasitism, competition, habitat destruction, hybridization, and changed disturbance regimes and nutrient cycles (Simberloff 2000). Climate change may exacerbate these effects by providing habitats for the non-native species that were not otherwise available. Simberloff (2000) provides numerous examples of invertebrate invasions in montane and tropical forests (e.g., gypsy moth (*Lymantria dispar*), balsam woolly adelgid (*Adelges piceae*), and carnivorous rosy wolf snail (*Euglandina rosea*); impacts on native Hawaiian birds from avian pox and malaria vectored by Asian myna (*Acridotheres*) and other Eurasian birds; brown snake (*Boiga irregularis*) devastation of native

birds on Guam; damaged forests in the continental United States and Hawaii by mammals such as European wild boar, feral domestic hogs, and hybrids; various invasive plants such as Chinese tallow (*Sapium sebiferum*), Chinese privet (*Ligustrum sinense*), black locust (*Robinia pseudoacacia*), Norway maple (*Acer platanoides*), tree-of-heaven (*Ailanthus altissima*), and princess tree (*Paulownia tomentosa*), each of which can displace or outcompete native species; and plant pathogens such as Asian chestnut blight fungus (*Cryphonectria parasitica*), white pine blister rust (*Cronartium ribicola*), and dogwood anthracnose (*Discula destructiva*). Feral pigs are an existing issue on Tejon Ranch and degrade habitat for several Covered Species, as discussed in Section 5 of this appendix. An emerging invasive pest in oak woodlands in southern California is the goldspotted oak borer (*Agrilus auroguttatus*), which is native to oak forests of southeastern Arizona (http://cisr.ucr.edu/goldspotted_oak_borer.html). In San Diego County, this species has infested three oak species - coast live oak (*Quercus agrifolia*), canyon live oak (*Quercus chrysolepis*), and California black oak (*Quercus kelloggii*), the latter two of which occur on Covered Lands, and another host is interior live oak (*Quercus wislizenii*), which also occurs on Covered Lands – these species are all members of the "red oak" group (http://cisr.ucr.edu/ goldspotted_oak_borer.html).

Woodland and shrubland communities may be vulnerable to conversion to more open savannah and grassland communities directly as result of climate change and/or increased fire intensity or frequency. As suggested by Lenihan et al. (2003), grassland would advance into the range of mixed evergreen woodland and shrubland due to a decline in the competitiveness of woody life-forms associated with reduced rainfall and increased or more intense fire events. D'Antonio and Vitousek (1992) discuss the mechanisms by which non-native grasses can outcompete native vegetation, including inhibition of seedlings of woody species by light absorption, water uptake, and nutrient uptake. Invasive grasses may also alter natural fire regimes due to high fuel loads and higher volatility. Grasses also recover from fire more quickly than woody species. Invasion by grassland therefore can then create a grass/fire cycle that increases the frequency, area, and intensity of fires (D'Antonio and Vitousek 1992).

As with native species, much more research is needed to understand the complex relationships between climate change and non-native species invasions and to make specific predictions, but such invasions are expected to be important as ranges shift and vegetation and habitat degradation facilitates the introduction of non-native species (Simberloff 2000).

The implications of introduced species to the Covered Lands are discussed in Section 5 of this appendix.

3.4 Uncertainty of Climate Change Projections

As discussed above in this section, there is general consensus among scientists that climate change is occurring and will have actual effects on biodiversity, ecosystem function, species, and habitats (e.g., Parmesan et al. 2000, Parmesan 2006; Walther et al. 2002). A review of the scientific literature by Parmesan (2006) revealed several climate change-related effects, including severe contractions and extinctions of range-restricted polar and mountain-top species; disruptions of predator–prey and plant–insect relationships due to differential responses to warming; evolutionary adaptations to warming in the interior portions of species' ranges, and rapid change in species' resource use and dispersal at range margins; and genetic shifts. While the evidence for climate change effects is clear, there remains a high degree of uncertainty about the specific nature of climate change scenarios (especially at regional or local scales), which depends in part on the success of Federal and regional efforts to reduce and control GHG emissions, and species- and habitat-specific effects of climate change at a community, ecosystem, or regional level (California Natural Resources Agency 2009; Hansen et al. 2001; Hulme 2005; Mustin et al. 2007; Peterson et al. 2002; USFWS 2009; Walther et al. 2002).

An important aspect of the species-specific effects of climate change is a species' capacity to adapt to climate change, either behaviorally (e.g., through habitat or range shifts or dispersal), or genetically (see Parmesan 2006). Based in the Quaternary record, species typically have responded to climate change by shifting their distributions rather than evolving *in situ* (Thomas et al. 2004). However, not all species are adapting to climate change. Genetic adaptation to climate change, which may include morphological, behavioral, or physiological changes, is highly uncertain, and there are few examples in the scientific literature demonstrating genetic-based responses to climate change or the capacity of species to evolve tolerances to climate change (Parmesan 2007) (also see Section 3.21 for taxonomic group discussions above). Attempts to create genetic models to examine adaptive responses to environmental change have revealed the complexity and uncertainty of such modeling (Parmesan 2007). Genetic responses to climate change depend on factors such as generation times, the genetic variation of local populations, gene flow, and the inherent capacity of the genome to evolve traits to exploit conditions (e.g., precipitation, temperature, food resources, etc.) outside those currently used by the species.

Several climate variables, and their interactions, will affect the magnitude and rate of warming, including the strength and direction of climate feedbacks (e.g., positive water vapor, albedo, and carbon-cycle feedbacks), thermal inertia of the oceans, rate of GHG emissions, and aerosol concentrations (Serreze 2010). The complex relationships among these variables will result in uncertain regional expressions of climate change and will not be uniform across the planet or even within the state of California (Serreze 2010). Lawler et al. (2010a) notes that there are at

least 24 atmospheric-ocean general circulation models coupled with more than 10 different GHG emissions scenarios being used to project climate change, with each producing different projections of atmospheric GHG concentrations. Because of this kind of variability and inherent uncertainty due to the different climate sensitivities of the models, the CAS (California Natural Resources Agency 2009) is based on a set of six global climate models run under two emissions scenarios (one a higher emission scenario and the other a lower emission scenario), yielding 12 combinations of climate model-emission scenarios. The CAS notes that the emission scenarios do not bracket the entire range of future emissions scenarios, with even lower or higher scenarios being possible. In addition, the likelihood of either of the two scenarios cannot be stated, although a "business as usual" scenario would most resemble the higher emission scenario. This combination of different climate models and emissions scenarios, which themselves are uncertain, results in a high level of uncertainty in the projections for climate change, as stated in the CAS:

> "…there is considerable uncertainty regarding future levels of GHG emissions due to the difficulty of predicting societal choices. It is compounded by scientific uncertainty over how the climate will respond to a given amount of GHG emissions. Global climate models also differ to some extent in how they treat atmospheric, terrestrial and hydrological processes, resulting in different levels of warming, and sometimes divergent patterns of precipitation." (p. 16)

The uncertain future climate change scenarios, combined with the complexity of short- and long-term stochastic (probabilistic) environmental events and intrinsic population dynamic, make it difficult to link global climate effects to small-scale responses and to predict locally specific effects (Walther et al. 2002). Some species may exhibit substantial effects, and others may show no measurable effect (Parmesan and Yohe 2003; Visser and Both 2005).

In addition, Parmesan (2007) suggests that current estimates that species' responses to climate change, such as advancement of spring arrival and latitude shifts, are significantly affected by study design and data-sampling statistical analysis methods. For example, increased numbers of observers or increased population abundances unrelated to climate change may be interpreted as range shifts (Parmesan 2007). While Parmesan (2007) estimated a "consensus" average response of between 2.3 and 2.8 days spring advancement per decade for global taxa, an analysis of latitudinal data failed to show a significant trend in response. Generally, Parmesan (2007) found a tremendous amount of variation of climate-related responses among species, both within taxonomic groups and across broad taxonomic/functional groups experiencing similar climatic trends, leading her to conclude that projections of effects on species across interacting trophic levels will be difficult without long-term field observations. Visser and Both (2005) additionally suggest that any observed changes to climate-related responses must be considered in the

ecological context in which the species lives to understand the effects, and specifically how climate change affects the optimum conditions of the activity that is most demanding of the species, such as migration or reproduction. Botkin et al. (2007) review four different forecasting methods for projecting the effects of climate change on biodiversity: (1) individual species-specific models, (2) niche-theory models that group species by habitat, (3) general circulation models (GCMs) and coupled ocean-atmospheric models, and (4) species-area curve models that consider all species or large aggregates of species.

In summary, while climate change effects on species are clearly documented at the global and broad regional scales, it is not possible at without long-term studies to make precise, quantitative predictions about local-scale species responses to climate change. This is due to the combined uncertainty of the climate models, a lack of regional or local precision of the climate models, the uncertainty of future emission scenarios, and the complexity of species' responses to climate changes

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SECTION 4. AN APPROACH TO ASSESSING SPECIES SENSITIVITY TO CLIMATE

Efforts are underway to understand what kinds of life history traits will make a species more or less sensitive to climate change and thus allow scientists to identify those species that are most vulnerable, and which may warrant additional study or adaptive management.[7] For example, the EPA Draft Framework (74 FR 61671-61673) describes a combined quantitative and qualitative method for evaluating threatened and endangered species' relative vulnerabilities to climate change, which includes taking a particular focus species through a series of four evaluation "modules" that are briefly reviewed here. It should be noted, however, that the Draft Framework has not been formally adopted. The notice of public comment period states that, "This document has not been formally disseminated by EPA and does not represent and should not be construed to represent any Agency policy or determination" (74 FR 61671). The Covered Species analysis presented in Section 5 of this appendix is based on the identification of general factors by the Draft Framework that can distinguish species that are relatively more sensitive to climate change from those that are relatively less sensitive, thus indicating which species may require additional study and management to address climate change effects. Determining the relative sensitivity of species to climate change allows for a general scaling of climate change effects. For example, if a species factor is declining populations due to loss of wetland habitat, hotter and drier conditions can reasonably be expected to exacerbate habitat loss and contribute to the decline of the species.

Module 1 of the Draft Framework scores a species' baseline vulnerability to stressors, not including climate change, based on several variables: current population size, current population and range trend, current and future trends of non-climate stressors, generation times (i.e., years to reproductive maturity), vulnerability to stochastic events, future vulnerability to policy/management changes, and future vulnerability to natural stressors.

Module 2 scores the likely vulnerability of the focus species to future climate change based on several variables, including physiological vulnerability to temperature and precipitation change, dispersive capability, degree of habitat specialization, likely extent of habitat loss due to climate change, ability of habitats to shift at same rate as species, habitat availability within a new range for a species, dependence on temporal inter-relationships (e.g., a species reliant on a certain food supply at a specific time), and dependence on other species. It should be noted that the Module 2

[7] Section 3 of this appendix discusses how climate change effects on biological systems are occurring on a global scale, but that both the future climate change scenarios and the specific regional effects of climate change on overall biodiversity, and on particular species and their habitats, are generally unknown or poorly understood (California Natural Resources Agency 2009; Hansen et al. 2001; Hulme 2005; Peterson et al. 2002; USFWS 2009; Walther et al. 2002). Thus, it is not currently possible to directly quantify and link the impacts of future climate change to specific future impacts on Covered Species. However, likely general trends on species and their habitats associated with climate change can be extrapolated from general principle, as is done in Section 5.

evaluation could reveal that some species may benefit from future climate change; for example, grassland species may benefit from increased wildfire and/or drought that reduce forest or shrubland vegetation.

Module 3 combines the results of the scoring in Modules 1 and 2 and produces a matrix that produces an overall vulnerability score for a species reflecting relative vulnerability, not an absolute or quantified vulnerability, to climate change.

Module 4 is a qualitative scoring of the uncertainty of the vulnerability evaluation based on the evaluation of Modules 1 through 3 that results in an index of uncertainty. The Draft Framework indicates that certainty judgments most likely will be based on expert judgment rather than a quantitative score.

The Draft Framework was applied to several sample species and generated several factors that appear to distinguish species that are relatively more sensitive to climate change from species that are relatively less sensitive.

Characteristics of species likely to be more sensitive to climate change include:

- Restricted distribution (e.g., narrow endemic species)
- Small population size
- Currently undergoing population declines
- Habitat specialists
- Found in habitats that are most likely to be affected by climate change.

Characteristics of species likely to be less sensitive to climate change include:

- Wide distribution
- Flexible habitat preferences
- Populations that are stable or increasing.

While species with these traits may be relatively more (or less) sensitive to climate change, they are only general characteristics that help identify species that may be more (or less) sensitive to climate change.

There is also emerging information in the scientific literature addressing the issue of species sensitivity in relation to other life history traits. Morris et al. (2008), for example, used a quantitative modeling approach to examine multiyear demographic data (population growth) for 36 plant and animal species with a broad range of life history strategies to determine how sensitive the species would be to a changing and more variable climate. Morris et al. (2008)

found that longevity was the key predictor, with short-lived species (insects, annual plants, and algae) likely to be more sensitive to climate change than long-lived species (perennial plants, birds, ungulates) regardless of taxonomic affiliation.

The analysis that follows uses these kinds of factors in qualitatively analyzing relative sensitivity of Covered Species to climate change. The EPA Draft Framework, as described above, was not formally applied for several reasons:

1. It has only been disseminated for public review and does not represent any Agency policy or determination.

2. The process of working through Modules 1-4 requires compilation of an enormous amount of species data, simplifying assumptions in the absence of empirical data, and likely large scale habitat modeling, including habitat changes over time associated with climate change. Developing the baseline information alone to run the evaluations is beyond the scope of what is typically required for a Habitat Conservation Plan.

3. Such large-scale assessment efforts can only feasibly be conducted by teams of scientists affiliated with government agencies (e.g., EPA, USFWS, U.S. Geological Survey, U.S. Forest Service), universities, or large non-profit environmental organizations (e.g., Audubon Society).

4. Module 4, which requires qualitative certainty judgments, requires the input of many scientists with diverse expertise, as well as peer review and likely several iterations to come to some consensus on the results. Again, the scale of such an effort is beyond that required for a typical Habitat Conservation Plan.

5. Because of the large amount of information needed to run the assessments and the many participants in the process, such efforts are conducted over time scales of many months to several years.

Moreover, as discussed above, neither the Draft Framework nor any other available analytical tool, enable a quantitative assessment of the impacts climate change will have on the Covered Lands or the Covered Species, or how these potential impacts will interact with other occurrences, such as direct or indirect impacts associated with the TU MSHCP. The Council on Environmental Quality (CEQ 2010) has recognized the infeasibility of directly linking the impacts of a particular government action to specific climate change effects. In the absence of available quantitative predictive tools, the Draft Framework concepts are employed to provide a qualitative discussion of relative sensitivity of the Covered Species to climate change.

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SECTION 5. CLIMATE CHANGE EFFECTS ON COVERED LANDS

General principles linking climate change to vegetation trends and species' population trends, life history traits, and ecological relationships are sufficiently developed to generally identify the potential for sensitivity of the vegetation communities and Covered Species on Covered Lands to climate change. As indicated in Section 1, it is expected that the Covered Lands will experience climate change effects such as warmer temperatures, altered precipitation, and seasonal shifts and lengthening of the growing season. These climate changes, in association with potentially more frequent and intense wildfires, may alter surface and groundwater hydrology, vegetation communities, microclimates, and microhabitats. The TU MSHCP anticipates these changes may result in different management needs and this is accommodated in Section 8.1, Changed Circumstances, of the TU MSHCP.

5.1 General Abiotic and Biotic Responses to Climate Change

As discussed above in Section 3.2.2, climate change may result in direct and indirect changes in abiotic and biotic resources in California due to a variety of factors. Vegetation communities may be altered by several climate-related factors, including length of growing season, precipitation amount and timing, temperature tolerances. A hotter and drier climate in California would facilitate expansion of deserts and grasslands (California Natural Resources Agency 2009). Elevational shifts in desert-adapted vegetation have been documented in southern California (Kelly and Goulden 2008). Increased intensity and frequency of wildfires would increase recruitment of non-native grasslands, further increasing fuel loads, and increase erosion of uplands and sedimentation of rivers and streams. Riparian and wetland communities also may be degraded by changing precipitation patterns and altered hydrology.

These kinds of effects could occur on Covered Lands and Tejon Ranch in general. Studies of oak woodlands in California by Kueppers et al. (2005) and Lenihan et al. (2003) suggest that woodland forest vegetation communities in the Tehachapi Range may be sensitive to climate change, potentially resulting in a conversion of some woodland communities to more savannah-type and/or grassland communities (Lenihan et al. 2003),[8] or actual expansion of some oak species in the region (Kueppers et al. 2005), as discussed below.

[8] Figure 4A of Lenihan et al (2003) shows that simulated vegetation classes for the historical period (1961-1990) are primarily grassland for the Tehachapi Range. In contrast, the current baseline vegetation map in Figure 4B of the paper shows the Tehachapis as primarily mixed evergreen woodland based on Küchler (1975), "Potential Natural Vegetation of the United States." Second Edition, American Geographical Society, New York. Although Lenihan et al. note that the simulated vegetation (Figure 4A) and baseline vegetation (Figure 4B) maps are generally similar, they are distinctly different for the Tehachapi Range and lower Sierra Nevada. Figure 4B is more consistent with the mapped existing vegetation communities on Covered Lands, which are about 64% woodland, savannah, and conifer

In addition, if fires of greater intensity and/or frequency associated with hotter and drier conditions occur, woodlands and shrublands (scrub and chaparral communities) could convert to grasslands, although such impacts may be less applicable to Tejon Ranch due to historic and current grazing patterns. Grazing on Tejon Ranch reduces fuel loads, including in savannah areas, thus reducing the magnitude of the positive feedback of grassland invasions that intensify the grass/fire cycle. If cattle were removed, there would be even greater buildup of grasses, thus increasing fine fuel loads, volatility and rate of spread, and increasing the chance of shrubland and woodland conversions to grassland.

Woodlands are the most common vegetation community on the Covered Lands, accounting for 36% of the total cover, followed by oak savannah at 25%, grasslands at 19%, chaparrals at 11%, scrubs at 6%, conifer forest at 3%, and riparian and washes at just over 1%. The Kueppers et al. (2005) study modeled the potential impact of climate change on two of the oak woodland constituents on Covered Lands—blue oak (*Quercus douglassii*) and valley oak (*Quercus lobata*). Blue oak-dominated woodland accounts for 9,141 acres (19%) of the 49,031 acres of woodlands, and blue oak savannah accounts for 5,157 acres (15%) of the oak savannah on Covered Lands. Valley oak occurs on Covered Lands but co-occurs with blue oak and is mapped as a white oak woodland or savannah. White oak savannah accounts for 9,076 acres (27%) of the savannahs and white oak woodland accounts for 899 acres (2%) of the oak woodlands on Covered Lands. Kueppers et al. (2005) determined that while the ranges of blue oak and valley oak in could decline overall by up to 59% and 56%, respectively, and generally shift northward under a regional climate model (RCM), the ranges of the both species may actually expand in the Tehachapi Range over existing conditions.

5.2 Covered Species Responses to Climate Change

Section 3.2.1 provided a general review of climate change effects on species, and focused reviews on amphibians and reptiles, birds, mammals, insects, and plants. Section 4 describes the EPA Draft Framework used to analyze the potential effects of climate change on the Covered Species in this section. The analyses presented in this section are not intended to make specific predictions or forecasts about the Covered Species' responses to climate change, but rather to identify the characteristics of the species that may make them more or less likely to be sensitive to climate change. As part of this analysis, current known and potential threats to Covered Species are described and potential links between current threats and potential future threats to the species are identified. Climate change effects may be additive to or interact with ongoing threats so that a species is put under greater pressure. For example, overgrazing is an identified

forest. Both the HAD (Figure 6A) and PCM (Figure 6B) models project expansion of grasslands in the Tehachapis in the 2070-2099 timeframe

source of habitat degradation for several of the Covered Species. Overgrazing effects may be intensified or exacerbated by climate change by altering grazing patterns, such as causing cattle to congregate more heavily in riparian zones that are occupied by amphibians and riparian birds. Information that links climate change to existing threats could help identify the Covered Species that may warrant monitoring and management in the future.

The following subsections first summarize the climate change responses and issues for the different taxonomic groups that were reviewed in Section 3.2.1. For each Covered Species within each taxonomic group, the EPA Draft Framework (2009) concepts described in Section 4 of this appendix are applied to identify characteristics of the species that are likely to be sensitive to climate change, such as it occurs in a vulnerable habitat, it has a restricted range, etc. The natural history of each species is then summarized and linked back to its potential sensitivity to climate change. To the extent appropriate for each species, potential climate change effects will be extrapolated to Tejon Ranch and Covered Lands.

5.2.1 Amphibians and Reptiles

As discussed in Section 3.2.1 of this appendix, climate change responses and issues related to amphibians and reptiles include:

- Physiological responses including reproduction, sex determination, and development
- Impacts on habitat quality and food availability
- Changes in breeding behaviors such as chorusing and spawning
- Range shifts, contractions and expansions
- Change in species richness
- Interactions between climate change and other stressors such as UV radiation, diseases and pathogens, and contaminants.

Tehachapi Slender Salamander (*Batrachoseps stebbinsi*)

The Tehachapi slender salamander has several characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic range
- Population sizes are likely to be relatively small
- It is a habitat specialist
- It occurs in habitat that is likely to be affected by climate change.

Based on these characteristics, the potential impacts of climate change on Tehachapi slender salamander include:

- Reduced available habitat and low ability to shift range
- Reduced reproductive activity, reduced suitability of oviposition sites, and reduced egg viability
- Exacerbation of other threats that degrade habitat, such as feral pigs and cattle grazing
- Altered predator-prey relationships
- Increased vulnerability to pathogens

The Tehachapi slender salamander occurs in small populations, has a narrow geographic range, and is closely associated with talus piles on seasonally shaded north-facing slopes. Tehachapi slender salamander was observed in the TMV Planning Area during surveys in Monroe Canyon (Dudek 2007a). It is usually observed in moist drainages with leaf litter, generally in mixed oak and canyon live oak woodlands, often with California buckeye as an associated species (Dudek 2007a). There are also four CNDDB occurrences of Tehachapi slender salamander in the Covered Lands, including: two in Bear Trap Canyon, one in a drainage adjacent to the California aqueduct, and one in Tejon Canyon in the northeastern section of the southern portion of the Covered Lands.

Tehachapi slender salamander habitat is potentially threatened by feral pigs, road construction, mining, logging, cattle grazing, and flood control projects (Hansen and Stafford 1994; Jennings 1996; Hansen and Wake 2005).

Based on an unpublished communication to the USFWS from Hansen and literature on the black-bellied salamander, the USFWS suggests that individuals may remain within approximately 3 meters (10 feet) during their life time, depending on climate conditions (pers. comm., Lechuga 2010). In any case, this species likely is high sedentary and unlikely to move long distances from breeding sites due to its dependence on moist habitats and rocky substrates. These factors together suggest that this species has relatively high sensitivity to climate change because there is little potential for it to shift its range in response to adverse climate effects. If precipitation declines, as is predicted for most of California, and conditions become hotter, available habitat for this species could be reduced. Reduced precipitation may also affect reproductive activity because this species reproduces during rainy periods in the winter and spring. Perhaps moderating the potential effect of reduced precipitation is the possible long life span of this species. Although Tehachapi slender salamander longevity is unknown, slender salamanders (*Batrachoseps* spp.) may live for several years, so it is unlikely that even a prolonged drought period in the future would extend beyond the lifespan of all individuals in a population. Reduced or degraded habitat, and potential impacts on reproduction, may also

exacerbate other potential threats identified for this species, such as feral pigs and cattle grazing if climate change alters the rooting and grazing patterns of these species in suitable habitat for the Tehachapi slender salamander. Although reduced precipitation could negatively affect breeding activity and degrade habitat through a reduction in woodlands and drier microclimates and microhabitats, warmer winter and spring temperatures may increase surface activity, potentially counteracting these negative effects, at least to some degree. As noted above, amphibians in general may exhibit range expansions based on habitat suitability modeling by Currie (2001), but with the Tehachapi slender salamander being limited to small, discrete habitat patches and having very limited dispersal, it may not benefit from warming in this way or be able to respond to rapid climate changes. Also, any potential range expansion may be counteracted by less precipitation and hotter summer temperatures.

As an invertebrate eater, Tehachapi slender salamander may also be sensitive to changes in food availability related to climate change if the timing of its aboveground activity becomes asynchronous with the peak activity of insect prey. Although the specific feeding habits of the Tehachapi slender salamander are unknown, the related California slender salamander (*B. attenuatus*) feeds on a variety of insects. If the Tehachapi slender salamander has similar feeding habits, this flexibility may counteract climate change effects. Also, if the species' aboveground activity is plastic and responsive to aboveground environmental conditions, it may be able to shift its aboveground activity to coincide with available food resources. These predator–prey relations and their potential response to climate change, however, are unknown. It is also unknown whether climate change could affect the abundance and behavior of predators of the Tehachapi slender salamander, such as ringneck snake, beetle larvae and other predatory arthropods, diurnal birds, and small mammals.

As discussed above, other potential sources of global decline in amphibians include UV-B exposure, contaminants and pesticides, and diseases and pathogens. Tehachapi slender salamander eggs are unlikely to be directly affected by UV-B exposure because eggs are laid in moist places under surface objects, but hotter and drier conditions may affect the suitability of oviposition sites and potentially reduce egg viability. With management of the Covered Lands, contaminants and pesticides should not be a significant problem. The potential for pathogens and diseases to affect the species is unknown, but if the species is affected directly (e.g., impacts to egg viability) or indirectly (e.g., behavioral alterations, food availability, habitat degradation) by climate change, its vulnerability to pathogens to may be increased (Kiesecker et al. 2001).

Western Spadefoot (*Spea hammondii*)

As discussed above, Davidson et al. (2002) found that declines in western spadefoot in southern and lower elevation sites in California were consistent with climate change predictions, but, after

accounting for habitat degradation, the effect of climate change was not a statistically significant predictor variable in the logistic regression analysis. Davidson et al. (2002) concluded that habitat degradation was the most important predictor in western spadefoot declines. Nonetheless, the western spadefoot has several characteristics of species likely to be sensitive to climate change:

- Currently undergoing population declines. Jennings and Hayes (1994) estimated that about 80% of its habitat in Southern California had been developed or converted to uses incompatible with successful reproduction.
- A habitat specialist. Western spadefoot depends on ephemeral aquatic habitats such as vernal pools for reproduction.
- Found in habitats most likely to be affected by climate change. Vernal pools and other ephemeral aquatic habitats are highly dependent on precipitation. Reductions in precipitation and warmer conditions could reduce breeding habitat for the spadefoot.

Based on these characteristics, the potential impacts of climate change on western spadefoot include:

- Reduced available breeding habitat
- Reduced reproductive activity, reduced suitability of oviposition sites, and reduced egg viability if water at breeding sites evaporates too rapidly
- Exacerbation of other threats that degrade breeding habitat, such as cattle grazing

Unlike the narrowly distributed Tehachapi slender salamander and yellow-blotched salamander, the western spadefoot has a wide geographic distribution, ranging from the north end of the Central Valley of California, east of the Sierras and the deserts, to northwest Baja California (Jennings and Hayes 1994; Stebbins 2003). It also has a broader elevational range (sea level to 4,000 feet) and occurs in a variety of habitats, including lowland, foothill, and mountain habitat. This broad spatial and habitat range suggests that western spadefoot is fairly adaptable to a range of environments and climate regimes, and likely would persist in at least parts of its range under projected climate change scenarios as long as suitable breeding habitat is available.

As noted above, habitat degradation appears to be an important factor in the decline of the western spadefoot. Habitat degradation may be related to overgrazing, off-road vehicles and other activities which affect fluvial processes in burrow areas, and the spread of exotic plant species. Spadefoot toad is also threatened by non-native predators such bullfrogs, crayfish, and fish and other urban development-related factors such as artificial lighting, noise, and predators such as cats and dogs.

Western spadefoot was not observed in the TMV Planning Area during the 2007 surveys (Dudek 2007a). Due to these negative survey results, western spadefoot is considered to have a low

potential to occur on Covered Lands below 3,000 feet and a very low potential to occur above 3,000 feet.

As an ectotherm, and like other amphibians, western spadefoot is expected to be strongly affected by environmental conditions due to potential effects on its reproduction. Development of tadpoles, for example, requires a reliable aquatic environment that persists for at least 3 weeks (Burgess 1950; Jennings and Hayes 1994). Although western spadefoots can accelerate development under reduced water volumes (Denver et al. 1998), reduced precipitation, sunnier conditions, and higher temperatures that could accelerate evaporation of breeding sites could result in lower overall productivity.

If the species were to occur on Covered Lands, hotter and drier conditions could affect the availability of reliable breeding pools. On the other hand, initiation of western spadefoot breeding is responsive to warm rains (water temperature must be at least 10°C before eggs are laid, with an upper range of about 30°C (Brown 1966, 1967)). If The Covered Lands becomes warmer in the winter and early spring, conditions may actually become more suitable at higher elevations. The current elevational distribution of western spadefoot is sea level to approximately 4,000 feet, with most populations at less than 3,000 feet. Much of the Covered Lands are therefore at the upper elevational range of western spadefoot. It is possible that a milder climate at higher elevations of its current range could increase the potential for western spadefoot to occur on site in the future; as noted above, at present, western spadefoot is considered to have a low potential to occur on Covered Lands at elevations below 3,000 feet, and very low potential to occur at elevations above 3,000 feet. As discussed above, habitat modeling and climate projections suggest that amphibians could expand their ranges in cold, high-elevation areas due to a moderating future climate (Arajuo et al. 2006; Currie 2001; Hansen et al. 2001; Lawler et al. 2010b). However, as noted by Lawler et al. (2010b) and Arajuo et al. (2006), limited dispersal capabilities by amphibians may reduce their potential to colonize new habitat areas. Also, reduced water availability, and thus less reliable breeding pools, from lower precipitation may offset projected range expansions.

Another potential benefit of climate change to western spadefoot is if climate change has a disproportionate impact on non-native predators that require perennial aquatic habitat, including non-native fish, bullfrogs (*Rana catesbeiana*), and crayfish (*Procambarus* spp.). If potential breeding habitat is subjected to periodic drying, these non-native species may be locally extirpated, leaving opportunities for western spadefoot to take advantage of ephemeral aquatic habitats.

Overgrazing is identified as a cause of habitat degradation for western spadefoot, and climate change could alter grazing patterns such that such habitat degradation could be exacerbated if cattle tend to congregate in suitable breeding habitat. However, moderate grazing may also serve

as an effective management tool for this species in responding to climate change. Lawler et al. (2010a) describe a climate-related management approach to vernal pool management where moderate cattle grazing is used to manage the vernal pools, which can become overgrown with vegetation and shorten the effective inundation period. Grazing extends the inundation period, which would allow spadefoots to complete their aquatic life history phase.

Yellow-blotched Salamander (*Ensatina eschscholtzii croceator*)

The yellow-blotched salamander has several characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic range
- Population sizes are likely to be relatively small
- It is a habitat specialist
- It occurs in habitat that is likely to be affected by climate change

Based on these characteristics, the potential impacts of climate change on yellow-blotched salamander include:

- Reduced available habitat
- Reduced reproductive activity, reduced suitability of oviposition sites, and reduced egg viability
- Exacerbation of other threats that degrade habitat, such as feral pigs and cattle grazing
- Altered predator-prey relationships
- Increased vulnerability to pathogens

Although the yellow-blotched salamander is likely to be sensitive to climate change, other factors offset its likely sensitivity such as a broader geographic range, broader elevational range (1,400 to 7,500 feet), and broader habitat associations. Its habitat includes mountain meadows, mixed conifers, and canyon live oak where canopies exceed 55%. Its occurrence is negatively associated with the presence of blue oak (which, as noted above, is projected by Kueppers et al. (2005) to contract in range as a result of climate change). Surveys for yellow-blotched salamander were conducted in all suitable habitat within the TMV Planning Area (Dudek 2007a). Individuals were observed in drainages in the southwestern portion of the Covered Lands generally east of Grapevine Peak, in the vicinity of Silver, Monroe, Squirrel, Palos Altos, Johnson and canyons, and along Bear Trap Canyon and its tributaries. There is one CNDDB occurrence of yellow-blotched salamander in Covered Lands, in a drainage adjacent to and north of Rising Canyon.

Yellow-blotched salamander is especially threatened by development and the cutting of oak woodland in the Tehachapi Mountains (Jennings and Hayes 1994). In addition, other land uses such as cattle grazing, hunting, camping, agriculture, and mining, may directly or indirectly impact yellow-blotched salamanders by altering habitat or creating soil disturbance (Jennings and Hayes 1994; Germano 2006). Additionally, feral pigs cause damage to animals and habitat (pers. comm., Hansen and Wake 2008).

While its habitat affinities are broader than the Tehachapi slender salamander, if climate change results in hotter and drier conditions on Covered Lands, suitable woodland habitat for the yellow-blotched salamander could be reduced as a result of poorer growing conditions, less recruitment of seedlings and saplings, higher incidence of pests or disease in unhealthy stands, and more frequent and/or intense wildfires that could convert woodlands to savannah-like and grassland vegetation communities. Similar to the Tehachapi slender salamander, degradation of yellow-blotched salamander habitat caused by feral pigs and overgrazing could be intensified if climate change alters the rooting and grazing patterns of these species.

Warmer weather on Covered Lands, if associated with adequate precipitation, could have some positive effects on yellow-blotched salamander because the species currently uses loamy soils that are generally warmer than surface air temperatures and moister than ambient conditions. However, if a warmer climate is accompanied by less precipitation, this potential positive effect could be counteracted by the species' requirement of a moist habitat (Germano 2006), although yellow-blotched salamander can withstand considerable dehydration (Cohen 1952; CaliforniaHerps 2007). In addition, generally drier microclimates and microhabitats could adversely affect this species. Juveniles appear to prefer moister habitat than adults, so less precipitation and hotter conditions could disproportionately affect juveniles and may adversely affect juvenile viability and their recruitment into the population.

Yellow-blotched salamanders feed on insects. Climate change could affect predator–prey relations if yellow-blotched salamanders' surface activity becomes asynchronous with peak insect productivity. However, because yellow-blotched salamanders feed on a wide variety of insects, indicating a flexible diet, they would not be as sensitive as a species that targets a more narrow range of prey. Also, if the species' aboveground activity is plastic and responsive to aboveground environmental conditions, it may be able to shift its aboveground activity to coincide with available food resources. These predator–prey relations and their potential response to climate change are unknown. It is also unknown whether climate change could affect the abundance and behavior of predators of the yellow-blotched salamander, including other salamanders, beetle larvae, snakes, birds, and mammals (including mice, raccoons, and bears).

Yellow-blotched salamander reproduction is unlikely to be significantly affected by increases in UV-B exposure because females lay their eggs under bark, in rotting logs, and/or underground, although eggs may be more vulnerable to desiccation under hotter and drier conditions.

Coast Horned Lizard (*Phrynosoma coronatum*)

The coast horned lizard has two characteristics of species less likely to be sensitive to climate change:

- It is widely distributed
- It has flexible habitat requirements and occurs in habitats that are less likely to be affected by climate change

However, the coast horned lizard also has two characteristics that could make it more sensitive to climate change than other more common reptile species:

- It is a specialist feeder on harvester ants (*Pogonomyrmex* spp.), although the habitats that support its primary prey are widely distributed and variable
- Populations are likely to be localized and relatively small, and are considered to be declining due to habitat loss and indirect effects such as invasions by Argentine ants (*Linepithema humile*)

The combined effects of these characteristics suggest that the coast horned lizard could be sensitive to climate change. If climate change affects the abundance and/or distribution of harvester ants, horned lizards could also be affected. As noted above, localized and small populations are sensitive to stochastic factors that affect local population viability (i.e., small populations are less resilient to changes that may affect reproduction, mortality, resource availability, etc.). Climate change could exacerbate stochastic factors and result in a higher risk of local extirpation.

Based on these characteristics, the potential negative impacts of climate change on coast horned lizard include:

- Reduced available habitat and habitat fragmentation combined with low dispersal capability and small populations
- Exacerbation of other threats that degrade habitat, such as cattle grazing
- Potential disruption of predator-prey (harvester ants) relationships

However, coast horned lizard could also benefit from, or be relatively unaffected by, climate change for several reasons:

- Positive (or neutral) response to conversion of shrubland sand woodland vegetation communities to more arid-adapted communities such as grasslands and savannahs
- Potential for expansion of harvester ants to more arid vegetation communities
- Reduced impacts by Argentine ants, which are attracted to wetter microhabitats than native harvester ants

The coast horned lizard occurs throughout most of California in locations west of the desert and Cascade–Sierran highlands, in elevations from sea level to around 8,000 feet. Although broadly distributed in California, the coast horned lizard had disappeared from about 35% of its historic range by the early 1990s (Jennings and Hayes 1994), and currently is abundant only in localized areas along the South Coast Ranges, and in isolated sections of natural habitat in the Central Valley (California Department of Fish and Game (CDFG) 2007a). Surveys were conducted for coast horned lizard as part of general surveys for reptiles in all suitable habitat within the TMV Planning Area (Dudek 2007a). Coast horned lizards were observed in 12 different locations in the TMV Planning Area. The majority of these occurrences were found in the southwestern portion of the TMV Planning Area, southeast of Dry Field Canyon and north of Oso Canyon. Coast horned lizard has been found in a wide variety of habitat types, including woodland, scrub, chaparral, and grassland (Dudek 2007a; TRC 2007).

The main threats to the coast horned lizard are habitat loss and fragmentation, and the spread of the Argentine ant (CDFG 2007). Other threat factors associated with urban development include an increase in the abundance of urban-related predators, such as pets and stray and feral cats and dogs; collecting of lizards; increased human activity resulting in habitat degradation (e.g., trampling of vegetation and introduction of exotic species); off-road vehicles; cattle grazing; and frequent fires that may cause long-term habitat transitions from shrublands (scrubs and chaparrals) to annual grassland, As a result of habitat loss and fragmentation and the spread of Argentine ants, the coast horned lizard probably is sensitive to additional environmental stressors such as climate change. Overgrazing related to climate change could cause habitat degradation. Also, because 90% of its diet consists of native harvester ants (Pianka and Parker 1975), any effects of climate change on food availability due to alterations in timing or abundance could negatively affect this species. It is unknown whether harvester ants are sensitive to climate change, but microhabitat changes associated with climate change, such as increased cover of non-native annual grasses, could adversely affect native ants (however, see discussion below on harvester ants).

On the other hand, the coast horned lizard occupies areas with different regional climate regimes (from sea level to montane habitats) within its geographic and elevational range in California. Coast horned lizards occupy several vegetation types where conditions include loose sandy soils, including California sagebrush scrub, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest (Klauber 1939; Stebbins 1954). The coast horned lizard's occurrence in a variety of habitats suggests that it has substantial flexibility to adapt to different environmental conditions. For example, its daily diurnal activity is closely tied to surface temperatures, with optimum activity occurring within a relatively broad temperature range of 29°C to 39°C (84°F to 102°F) (Heath 1965). When surface temperatures exceed 40°C, horned lizards behaviorally thermoregulate by covering themselves with loose soil (Stebbins 1954). Coast horned lizards exhibit other life history traits that should allow them to respond to changing or variable environmental conditions such as drought. This species is relatively long-lived, with individuals living more than 8 years (Baur 1986). Even if climate change, and associated effects such as increased wildfires, resulted in conversion of vegetation communities to more arid-adapted types (e.g., grasslands, oak savannas), as long as soil conditions were appropriate and prey was available, coast horned lizards should effectively respond to the changes. Coast horned lizards were observed in the TMV Planning Area in woodland, scrub, chaparral, and grassland. Conversion of some woodlands and shrublands on Covered Lands to more savannah-like and grassland communities probably would not directly affect the coast horned lizard.

As noted above, potential effects of climate change on native ants are unknown. However, a potential benefit of a hotter and drier climate in California to the coast horned lizard is the possible contraction of Argentine ant distributions. This non-native ant disrupts natural ecosystems by driving out or killing native ants in newly invaded territories, including harvester ants, the coast horned lizard's primary prey (Holway et al. 2002; Suarez and Case 2002). Argentine ants are attracted to moist habitat conditions, typically areas with irrigation where moisture collects underneath buildings, sidewalks, and rocks, and along fence lines. Argentine ants have limited thermal tolerances and cannot invade hot, dry environments with low soil moisture conditions. Native ants that are better adapted to hot, dry conditions, including harvester ants, may more successfully coexist with Argentine ants under future climate conditions in California because soil conditions would be drier in areas that are not irrigated or subject to urban runoff.

As noted above, coast horned lizards could be affected by climate change through its effect on prey availability. Interestingly, one study in southeastern Arizona by Brown et al. (1997) demonstrated that harvester ants are sensitive to climate change, but in this study the climate change was a period of higher precipitation, resulting in increased shrub cover in the study area.

Brown et al. (1997) found that two harvester ant species (*Pogonomyrmex rugosus* and *P. desertorum*) that are characteristic of open arid grassland and desert habitat decreased in relation to wetter conditions and vegetation changes. Although the effect of a hotter and drier climate in California on harvester ants is unknown, this study suggests that a conversion of shrubbier vegetation to more arid grassland and desert conditions may favor harvester ants and could indirectly benefit the coast horned lizard.

Hotter and drier conditions in the future could also facilitate population expansions of coast horned lizard, consistent with the modeling for amphibians and reptiles by Currie (2001). However, coast horned lizards probably have limited dispersal capabilities, as indicated by small home ranges of usually less than 5 acres for horned lizards as a group (e.g., Munger 1984) and home ranges of coast horned lizards in southern California of 3 to 3.5 acres (Suarez, pers. comm. 2005). In addition, existing habitat fragmentation in coastal regions of California likely will limit the ability of coast horned lizards to colonize new habitats, although there could be some elevational shifts in undisturbed montane areas.

Two-striped Garter Snake (*Thamnophis hammondii*)

The two-striped garter snake has two characteristics of species likely to be sensitive to climate change:

- It occurs in habitats that are more likely to be affected by climate change.
- Populations appear to have declined throughout much of its range.

However, the two-striped garter snake also has characteristics of species less likely to be sensitive to climate change:

- It still has a relatively broad geographic distribution
- It occurs in a variety of aquatic and riparian habitats
- It is a generalist in its feeding habits

Based on these characteristics, the potential negative impacts of climate change on two-striped garter snake include:

- Reduced availability of wetland and riparian habitats and likely low dispersal capabilities
- Reduction of available prey in wetland and riparian habitats and consequent reduced reproductive capacity
- Exacerbation of other threats that degrade habitat, such as cattle grazing, and predation by feral pigs

The two-striped garter snake is widely distributed in coastal California from the San Francisco Bay area south to Baja California, including the southwestern portion of San Bernardino County, western Riverside County, and all but the easternmost portion of San Diego County. It occurs in a variety of perennial and intermittent streams within oak woodlands, shrublands, and sparse coniferous forests from sea level to approximately 7,800 feet. However, it is a highly aquatic snake and is not found far from water (Jennings and Hayes 1994). Two-striped garter snake was observed in the southwestern and central portions of the TMV Planning Area east of Rising Canyon, in Dry Field Canyon, and in Bear Trap Canyon. The species has been observed in oak savannah and chaparral habitats near water sources (Dudek 2007a; TRC 2007).

Populations of two-striped garter snakes have been affected by the elimination of natural sloughs and wetlands, loss of riparian habitat due to agriculture and urbanization, predation by non-native bullfrogs, fish, and feral pigs, and loss of amphibian prey.

Even though it has a relatively wide geographic and elevational distribution, hotter and drier conditions in California, and on Covered Lands, in the future could therefore result in reduced aquatic habitat for this species, especially in ephemeral and intermittent creeks and drainages. Alterations of water sources and associated wetland communities due to reduced precipitation, flows, or earlier seasonal drying on Covered Lands could reduce the population size and distribution of this species on site. Changes in the behavior of feral pigs related to climate change could affect this species if pigs were attracted to its habitat under hotter and drier conditions. Two-striped garter snake also feeds on a variety of aquatic prey and other species associated with wet or moist habitats, including small fish, fry, and eggs (*Cottus* sp., *Eucyclogobius* sp., *Gasterosteus* sp., *Oncorhynchus* sp.), frogs and toads (*Bufo* sp., *Rana* sp., *Pseudacris* sp.), newts (*Taricha* sp.), leeches and earthworms (*Annelida*), and insect larvae (*Anthropoda*) (Jennings and Hayes 1994). Hotter and drier conditions therefore could reduce the distribution and abundance of prey, or alter their timing of peak productivity in relation to the garter snake's energetic requirements. On the other hand, drier conditions could benefit the two-striped garter snake in areas where it is preyed on by bullfrogs and introduced fishes such as bass (*Micropterus* sp.) if their aquatic habitats experience periodic drying.

Given its broad geographic and elevational distribution, it is likely that the two-striped garter snake can respond to a range of environmental conditions. It is unlikely that generally warmer temperatures would directly adversely affect two-striped garter snakes, although individuals may respond to changes in local conditions, such as microclimate, microhabitat, or hydrological alterations. Two-striped garter snakes are most active in mornings and nights of warm days and warm afternoons of cooler days (Zeiner et al. 1990a). They generally retreat to communal hibernation burrows as the days shorten, generally in October and depending on latitude and elevation, but will emerge from torpor to sun on warmer days (Jennings and Hayes 1994). Two-

striped garter snakes give birth to live young, so climate change should have relatively little direct effect on reproduction compared with egg-laying species. However, if energetic requirements to support reproduction are compromised due to a lower availability of prey or microclimate changes, reproductive output could be reduced.

It is unlikely that two-striped garter snake could expand or significantly shift its distribution in response to hotter and drier conditions in the future, as generally suggested by habitat modeling for amphibians and reptiles by Currie (2001). The dispersal capability of this species also is unknown, but they have relatively small streamside home ranges of 0.012 to 1.2 acres, with a median of 0.37 acre (Jennings and Hayes 1994). Their winter upland home ranges adjacent to stream habitats are somewhat larger, but still relatively small with a median of 0.84 acre (Jennings and Hayes 1994).

5.2.2 Birds

As discussed in Section 3.2.1 of this appendix, climate change responses and issues related to birds include:

- Shifts to earlier spring activities such as arrival of migrants, first singing and breeding
- Changes in breeding patterns in relation to precipitation patterns (i.e., drought and wet cycles)
- Latitudinal and elevational range shifts
- Changes in species richness
- Genetic and behavioral adaptations to climate change.

American Peregrine Falcon (*Falco peregrinus anatum*)

The American peregrine falcon has several characteristics of species less likely to be sensitive to climate change:

- It has a broad geographic range
- Its populations appear to be increasing
- It has flexible foraging habitat requirements.

Based on these characteristics, the use of Covered Lands by American peregrine falcon is unlikely to be substantially affected by climate change.

The American peregrine falcon occurs in Alaska, western Canada, the Great Plains, the western United States, and northern Mexico. It occurs throughout California, except for desert regions. The principal cause of the peregrine falcon population decline was the use of organochlorine pesticides, especially dichloro-diphenyl-trichloroethane (DDT), which metabolizes to dichlorodiphenyldichloroethylene (DDE). The loss of suitable nesting places is probably detrimental

to the species, and the loss of wetland habitat supporting large avian populations probably hurts migratory populations (White et al. 2002). Since the 1980s, and following the ban of DDT in the United States in 1972, the peregrine falcon population in the United States has been increasing due to recovery efforts, including public and private captive breeding programs (White et al. 2002). Focused surveys were conducted for American peregrine falcon in all suitable/potential breeding habitat within the TMV Planning Area to search for nests (Dudek 2007a). It was observed foraging in the TMV Planning Area on one occasion during winter. This species has low potential to breed on Covered Lands due to a limited amount of suitable nesting habitat.

The broad distribution of the species in different climate zones indicates that it should have high flexibility in responding to climate change. Further, its occasional use of Covered Lands for foraging and very limited potential to nest on site suggests that its use of the Covered Lands as a result of climate change effects is unlikely to significantly change.

In addition to its broad distribution in the United States and Canada, the peregrine falcon's foraging habitat requirements are very flexible. This species is extremely mobile and may occur anywhere there is suitable habitat and prey (e.g., mostly birds, but also small mammals) (Garrett and Dunn 1981), suggesting that it would be able to successfully track climate change effects on its prey base. The main potential effect of climate change on foraging habitat would be a reduction of wetland habitats used by prey birds such as shorebirds and waterfowl. However, common bird species such as pigeons and doves make up a large part of the peregrine falcon's diet. It is unlikely that potential climate change effects on Covered Lands would significantly affect the availability of its prey on site.

Another potential effect of climate change, which is applicable to most birds, is the impact on eggs and nestlings and whether increased temperatures could cause thermal stress. This is unlikely to affect peregrine falcons because they nest over a wide geographic range with wide temperature ranges. In California, for example, active nest sites are known from along the north coast of Santa Barbara, the Sierra Nevada and other mountains of Northern California, San Diego County, and downtown Riverside (Cleary-Rose 2002, pers. comm.). Thermoregulation of eggs and young in the nest are more likely under the direct control of the birds than ambient conditions. Because the peregrine falcon is unlikely to nest on site due to limited nesting habitat, any potential effects on reproduction are unlikely to occur on Covered Lands.

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle has several characteristics of species less likely to be sensitive to climate change:

- It has a broad geographic range
- Its populations appear to be increasing

- It has flexible foraging habitat requirements.

Based on these characteristics, the use of Covered Lands by bald eagle is unlikely to be substantially affected by climate change.

The bald eagle is the only sea eagle regularly occurring on the North American continent. Bald eagles breed locally from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. The species winters in the large majority of the breeding range but generally withdraws from central Alaska and the central and the northern portions of Canada (AOU 1998). Individuals that breed in California may make only local winter movements in search of food. Within mainland Southern California, the species primarily winters at larger bodies of water in the lowlands and mountains (Garrett and Dunn 1981). Threats to the bald eagle include habitat loss, effects of pesticides on reproductive success, and persecution by humans. Special pressures on individuals in the southwestern United States include heat stress, nest parasites, and entanglement in fishing line debris from intense fishing pressure (60 FR 35999–36010).

The bald eagle was one of the species used in the Draft Framework to develop the vulnerability assessment methods (Draft Framework Appendix B, "Example Narrative for Bald Eagle"). The Draft Framework provided the following information to support the conclusions that the bald eagle has a relatively low vulnerability to climate change:

- Populations of the species have been, and are, increasing throughout its North American range; this species is highly mobile and has a high dispersal capacity.
- One of the main stressors on the bald eagle—DDT—has been banned in the United States, and it is likely that effects of contaminants will continue to diminish.
- Due to its widespread distribution, relatively large population, and long adult lifespan of decades, the bald eagle is relatively non-susceptible to adverse sporadic events such as temporary food shortages or nest site destruction, as well as disease, parasitism, and other stressors.
- Due to its widespread distribution in areas with different temperature and precipitation regimes, it is unlikely to be directly affected by weather variables.
- Within the broad habitat types of wooded coastal, lake, or river margins, the species is flexible in its habitat use, and it is likely to be able to shift habitats at the same rate as climate change effects (e.g., shifting habitat use northward).
- The species has substantial potential for range expansion into extensive boreal forest habitat.
- The species has low potential to be dependent on temporal inter-relations and other species, with the exception of salmon runs.

Bald eagles have been observed infrequently foraging in the vicinity of Castac Lake over open grasslands and chaparral habitats during various surveys conducted in portions of the Covered Lands (Dudek 2007a). The CNDDB reports two bald eagle observations along the California Aqueduct north of the southern portion of the Tehachapi Mountain Uplands (San Joaquin Valley side) of the Covered Lands; the occurrence data is located in grasslands and agricultural fields (CDFG 2008; TRC 2007). Because the bald eagle's use of the Covered Lands is primarily limited to foraging in the vicinity of Castac Lake, and because of its flexible foraging habitat requirements, it is highly unlikely to be sensitive to potential climate change on Covered Lands.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl has several characteristics of species less likely to be sensitive to climate change:

- It has a broad geographic range
- It occurs in habitat that is less likely to be substantially affected by climate change
- It has flexible foraging habitat requirements.

Based on these characteristics, the use of Covered Lands by burrowing owl is unlikely to be substantially affected by climate change.

Burrowing owl, as a species, is widely distributed in the western hemisphere in North and Central America. Burrowing owls in California belong to the western burrowing owl (*A. cunicularia hypugaea*) subspecies, whose historical breeding range extended from southwestern and south-central Canada southward through the Great Plains and western United States and south to central Mexico. The burrowing owl also has a broad elevational range in California, with nest sites documented from 200 feet below sea level in Death Valley to 12,000 feet in Yosemite, indicating an ability to respond to a variety of climatic conditions, and likely the ability to adjust to changing climate conditions.

CDFG protocol surveys were conducted in all suitable/potential breeding/foraging habitat within the TMV Planning Area (Dudek 2007a). One migrant burrowing owl was observed near Tunis Ridge in non-native grassland at approximately 4,900 feet. No burrowing owl breeding observations have been made during surveys in any portion of the Covered Lands (Dudek 2007a).

Threats to the burrowing owl include the elimination of burrowing mammal populations through control programs and habitat loss (Klute et al. 2003). Other reasons for decline of the burrowing owl listed include habitat fragmentation, predation, illegal shooting, pesticides and other

contaminants (Bates 2006; CDFG 2008; DeSante et al. 1997; USFWS 2002; Haug et al. 1993; Klute et al. 2003).

The burrowing owl probably is not particularly sensitive to climate change. First, it is unlikely that reproduction would be significantly adversely affected by climate change, such as incubation of eggs and care of nestlings. Broods are raised in underground burrows where microclimate conditions are affected by physical factors such as soil type, entrance aspect, slope, burrow depth, and convection (Larson 2009). Such factors could affect nest site selection by burrowing owls, but their importance is still poorly understood (Larson 2009). However, Lantz (2005) did find that ambient air temperature was a factor in burrowing owl "daily nest survival" in northeastern Wyoming, along with the effects of different breeding years and nest stages. Nonetheless, the burrowing owl's documented nesting activity in different climate regions suggests that surface temperatures and other climate factors are not particularly critical limits on nesting activities; that is, burrowing owls probably are able to tolerate a broad thermal range of surface temperatures through various behavioral adjustments such as microhabitat selection (e.g., shade, burrows).

Second, burrowing owls occur in habitats less likely to be substantially affected by hotter and drier conditions. In California, western burrowing owls are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations and they prefer treeless areas (Bates 2006). Therefore, hotter and drier conditions, as well as more frequent and intense wildfires, are likely to maintain and perhaps even expand habitat areas suitable for burrowing owls. In addition, burrowing owls often use burrows made by fossorial mammals adapted to hot and dry conditions, such as the California ground squirrel (*Spermophilus beecheyi*). California ground squirrels are also very widespread in California (except for desert regions) and are very common in disturbed and early successional habitats (Zeiner et al. 1990c), and therefore less likely to be affected by direct and indirect climate change effects on vegetation communities.

Nesting by burrowing owls on Covered Lands has not been observed and climate change therefore may not affect this species on site. However, if it were to nest on site in the future, given its apparent adaptability to a broad range of climate and habitat conditions, it is unlikely that reproduction would be significantly affected by potential climate change on Covered Lands. Burrowing owls also are relatively generalist in their feeding habits, suggesting that they could respond to changes in prey availability and abundance related to climate change more effectively than feeding specialists. Their prey includes insects, small mammals, reptiles, birds, and carrion (Zeiner et al. 1990b). Even with some alterations of predator–prey relationships related to climate change, such as the appearance and peak productivity of insects, burrowing owls should be able to respond to these alterations by taking alternate prey. Potential impacts of climate change on prey availability and timing on Covered Lands similarly are not expected to be

significant. Potential conversion of woodlands and shrublands to savannah-like and grassland habitats is unlikely to reduce the availability of insects and small mammals in particular.

Although the burrowing owl is not expected to be directly sensitive to climate change based on its habitat selection and foraging requirements, because it is considered to be declining and subject to several threats, currently unknown climate-related factors or interactions could place additional stress on the species.

California Condor (*Gymnogyps californianus*)

Potential climate change effects on the California condor are addressed with respect to potential impacts on foraging habitat because Covered Lands only support foraging activity.

The California condor has two characteristics of species likely to be sensitive to climate change:

- It has a relatively broad geographic range and is highly mobile.
- It forages in habitat that is less likely to be substantially affected by climate change.

Based on these characteristics the use of Covered Lands by California condor is unlikely to be substantially affected by climate change.

However, the wild population is still small and vulnerable to stochastic events. It also is subject to several anthropogenic threats, including lead contamination, ingestion of microtrash, attraction to humans and artificial structures, collisions with powerlines, and shooting. In addition, while it has flexible foraging requirements in that it feeds on the carrion of various species, climate change could reduce prey availability. Therefore, the condor may be more sensitive to climate change than more common scavenger species such as turkey vulture, which has a larger, more widespread population and a less restricted diet.

California condor foraging occurs in open terrain of foothill grassland and oak savannah habitats and occasionally in open scrub habitat, although it may forage virtually anywhere within its range where it locates prey. Condor foraging habitat tends to be relatively arid and therefore should not be negatively affected by future hotter and drier conditions in California. The primary potential effect of climate change on condor activity on Covered Lands is food availability, and specifically the availability of naturally occurring deer carcasses and hunter-related gut piles. Grazing and browsing behavior by deer may be affected by vegetation changes, such as increases in non-native grassland and reduced shrub vegetation. Also, energetic and predator–prey relationships of deer may be altered with a potential reduction of shrublands, woodlands, and forests, exposing deer to harsher environmental conditions and potentially affecting development, fecundity, and juvenile mortality (see Walther et al. 2002). Deer that are in poor

condition may be more vulnerable to mountain lions. This predator–prey relationship could change over time, however. Increased deer kills by mountain lions may increase food resources for condors, at least in the short term, but chronically reduced deer populations may also cause a reduction in the mountain lion population over time, and thus fewer kills. Combined with the relatively small size of the wild condor population and other threats to the species, a loss of prey availability over time could be a substantial negative effect of climate change on this species.

Golden Eagle (*Aquila chrysaetos*)

The golden eagle has several characteristics of species less likely to be sensitive to climate change:

- It has a broad geographic range
- Its populations are considered to be secure globally (although declining in California).
- It has flexible foraging habitat requirements.

Based on these characteristics, golden eagle is unlikely to be substantially affected by climate change throughout its range. However, because the species is declining in California, the incremental contribution of climate change to existing stressors could have an adverse effect on populations in the state and on Covered Lands for two possible reasons:

- Reduction of woodland and forest nesting habitats due to habitat conversion
- Reduced reproduction if prey availability is reduced

The golden eagle has a holarctic distribution (i.e., northern continents), extending as far south as north Africa, Arabia, the Himalayas in the Old World, and Mexico in North America. Golden eagles primarily occur in the western regions of North America and breed locally from Alaska southward to northern Baja California and northern Mexico and eastward to the western Great Plains. This species is sparsely distributed throughout most of California, occupying primarily mountain, foothill, and desert habitats (Zeiner et al. 1990b). The golden eagle is rated as globally secure, but vulnerable in California (NatureServe.org 2009). It ranges from sea level up to 11,500 feet in elevation (Grinnell and Miller 1944). This broad geographic and elevational distribution indicates that the golden eagle tolerates a broad range of climatic conditions, and suggests that it could effectively respond to climate change.

Golden eagles have been observed breeding in four areas in the TMV Planning Area (Dudek 2007a). Four nests, three of which were active in 2007, were observed in dense canyon live oak forest and in mixed oak forests with California buckeye. Golden eagles have been observed foraging throughout the Covered Lands, but were generally observed in grasslands, scrub

communities, and open woodlands. Golden eagle is expected to occur in a regular distribution on Covered Lands within suitable habitat based on observations within the TMV Planning Area.

Threats to the golden eagle in California include loss of foraging and nesting habitat largely due to the loss of grasslands to agriculture and urbanization. Additional threats to this species are human disturbance of nest areas leading to desertion of the nest in early incubation, urbanization, poaching, and electrocution from high tension wires (Remsen 1978; Thelander 1974). Other sources of direct golden eagle fatalities include wind turbine strikes and lead poisoning (Thelander 1974).

The golden eagle requires broad, open terrain for hunting. Potential hotter and drier conditions on Covered Lands in the future are therefore unlikely to negatively affect foraging habitat for this species, and increasing aridity and opening of habitat due to drought and wildfires could actually increase foraging habitat for golden eagles. Suitable nesting habitat for golden eagle on Covered Lands, however, could be adversely affected if climate change causes a reduction or thinning of woodland and forest habitats.

The golden eagle is a feeding generalist and an opportunistic forager (Olendorff 1976). It primarily hunts lagomorphs (hairs, rabbits, and pikas) and rodents; it also hunts other medium to large mammals, birds, reptiles, and some carrion (Johnsgard 1990; Olendorff 1976). For this reason, it is unlikely that climate change would have a substantial negative effect on the ability of golden eagles to forage. As noted above, drought and wildfire could increase the amount of foraging habitat for golden eagles. However, breeding success is related to prey abundance, so there is the potential for climate change to affect productivity if prey availability is reduced.

The golden eagle is still widespread globally and common in some areas of its range. In California, however, the golden eagle has declined due to loss of foraging and nesting habitat; largely the loss of grasslands to agriculture and urbanization. Additional threats to this species are human disturbance of nest areas leading to desertion of the nest in early incubation, urbanization, poaching, and electrocution from high tension wires (Remsen 1978; Thelander 1974). Other sources of direct golden eagle fatalities include wind turbine strikes and lead poisoning (Thelander 1974). Although golden eagles probably are not particularly sensitive globally to the direct effects of climate change for similar reasons as the peregrine falcon and bald eagle (i.e., widespread distributions and habitat and foraging generalists), they are declining in California. Incremental additional stress related to climate change, such as reduction on woodland and forest habitats used for nesting, combined with existing stressors, could make this species somewhat more sensitive to climate change in California compared to other parts of its range.

Least Bell's Vireo (*Vireo bellii pusillus*)

The least Bell's vireo has two characteristics of species likely to be sensitive to climate change:

- It has a relatively restricted breeding range in California.
- It is a breeding habitat specialist and its breeding habitat is likely to be affected by climate change.

In addition, as an insectivorous migrant, it may be more susceptible to decoupling of important ecological relationships, such as predator–prey disruptions.

On the other hand, because the breeding population in California has shown substantial increases over the last decade, it probably is relatively less sensitive to climate change than species currently undergoing population declines.

Based on these characteristics, the potential negative impacts of climate change on least Bell's vireo include:

- Reduced availability of riparian habitats
- Reduction of available prey and consequent reduced reproductive capacity

The least Bell's vireo formerly was commonly found in valley bottom riparian habitats from Tehama County, California, southward locally to northwestern Baja California in the south, and as far east as the Owens Valley, Death Valley, and along the Mojave River (Grinnell and Miller 1944). It was a common and widespread summer resident below approximately 2,000 feet in the western Sierra Nevada, throughout the Sacramento and San Joaquin valleys, and in the coastal valleys and foothills from Santa Clara County south (Zeiner et al. 1990b). It was also was common east of the Sierra Nevada below approximately 4,000 feet in the Owens and Benton valleys, along the Mojave River and other streams at the western edge of southeastern deserts, and along the entire length of the Colorado River (Grinnell and Miller 1944).

Except for a few outlying pairs in Central California, the least Bell's vireo is currently restricted to Southern California south of the Tehachapi Mountains and to northwestern Baja California (USFWS 2006a). USFWS protocol surveys were conducted in 2007 in all suitable/potential breeding habitat within the TMV Planning Area (Dudek 2007a). These surveys were negative; therefore, potential for least Bell's vireo to nest or forage in the TMV Planning Area and on Covered Lands is considered to be low.

The major threats to least Bell's vireo include the loss and degradation of riparian habitat and nest parasitism by the brown-headed cowbird (*Molothrus ater*) (USFWS 1998; 51 FR 16474).

Least Bell's vireo habitat has been impacted by the loss and modification of hydrological and fluvial processes, sand mining, groundwater withdrawal, mosquito control, infestation of non-native plant species (e.g., giant reed), loss of native habitat buffers, and edge effects from upland development (Brown 1993).

Least Bell's vireo breeding habitat in California generally is limited to willow (*Salix* spp.) riparian vegetation communities located in the immediate vicinity of water courses below approximately 1,500 feet in elevation (51 FR 16474; USFWS 1998; Small 1994). Given its current limited breeding range in California, it is unknown whether least Bell's vireo would be able to shift its distribution either northward or to higher elevations in response to climate change, such as on Covered Lands, which range from approximately 2,000 feet to 6,000 feet in elevation.

Nesting sites are typically selected within structurally heterogeneous woodlands, forests, and scrub that support dense vegetation near the ground and dense horizontally separated vegetation higher up in the canopy (Goldwasser 1981; Gray and Greaves 1984; Kus 2002; RECON 1989). If these riparian systems were substantially altered by hotter and drier conditions, or experienced altered hydrologic regimes such as flood frequencies, volume, and/or timing, nesting habitat could be degraded. Riparian plant succession appears to be an important influence in maintaining vireo habitat (Franzreb 1989; Goldwasser 1981). For example, because vireos often nest in early successional willow-dominated vegetation of 5 to 10 years in age (RECON 1989), fewer or lower flow-volume flood events and generally drier conditions could favor mature riparian systems dominated by cottonwoods (*Populus* spp.) with relatively little understory of willow and mulefat (*Baccharis salicifolia*) typically used for nest sites. Less dense riparian vegetation at nesting sites may also increase the vireo's vulnerability to nest predators; nest parasites, such as brown-headed cowbird; and other abiotic environmental factors that could affect nest success, such as solar and wind exposure. These kinds of climate-related effects on riparian habitat could occur on Covered Lands.

The species primarily feeds on spiders, bugs, beetles, bees, wasps, snails, grasshoppers, moths, butterflies, and, rarely, fruit (Chapin 1925). As an insectivore, the least Bell's vireo potentially is sensitive to phenological effects of climate change that could decouple important predator–prey relations. For example, with warmer winter and early spring conditions, peak insect production could occur earlier or later than the vireo's peak energy needs for optimum reproduction. Such effects would depend on species-specific individual responses to climate change by the least Bell's vireo and its preys, such as changes in migration temporal patterns, host plant phenology, etc. These relationships and their potential responses to climate change are unknown and, therefore, specific predictions about the potential effects of climate change cannot be made.

Willow Flycatcher (*Empidonax traillii*)

The willow flycatcher, including the little willow flycatcher (*E. t. brewsteri*) and southwestern willow flycatcher (*E. t. extimus*) subspecies, has several characteristics of species likely to be sensitive to climate change:

- Both subspecies have relatively restricted breeding ranges in California.
- Both subspecies are breeding habitat specialists and their breeding habitat is likely to be affected by climate change.
- Breeding populations of both subspecies in California are relatively small.

In addition, as an insectivorous migrant, the willow flycatcher may be more susceptible to decoupling of important ecological relationships, such as predator–prey disruptions.

Based on these characteristics, the potential negative impacts of climate change on willow flycatcher include:

- Reduced availability of riparian habitats
- Reduction of available prey and consequent reduced reproductive capacity
- Exacerbation of other threats that degrade habitat, such as cattle grazing

The little willow flycatcher breeds in California from Tulare County north along the western side of the Sierra Nevada and Cascades, extending to the coast in northern California. It is a rare to locally uncommon summer resident from about 1,970 to 8,000 feet in elevation (Zeiner et al. 1990b). Most of the remaining breeding populations occur in isolated mountain meadows of the Sierra Nevada and Cascades (Sanders and Flett 1989). Breeding populations of little willow flycatcher in California are small. As of about 1998, about 28 to 41 breeding territories were documented in Sierra and Alpine counties, and possibly one breeding territory was observed along the Klamath River (Craig and Williams 1998). Approximately 114 little willow flycatcher individuals were observed in Siskiyou and Plumas counties in 1997 (Craig and Williams 1998).

The southwestern willow flycatcher's breeding distribution in California extends from the Mexican border north to Independence in the Owens Valley, South Fork Kern River, and the Santa Ynez River in Santa Barbara County (Craig and Williams 1998). Once considered a widespread and common breeder in Southern California, the southwestern willow flycatcher had declined precipitously throughout its range during the 50 years up to the 1980s (Unitt 1987). As of 2000, the number of southwestern willow flycatchers in California was estimated at approximately 200, recorded at 22 locations within 13 drainages (Finch and Stoleson 2000).

USFWS protocol surveys were conducted in 2007 in all suitable/potential breeding/foraging habitat within the TMV Planning Area (Dudek 2007a). Foraging observations of willow flycatchers were made, and based on the timing of the observation, they were likely little willow flycatchers migrating to breeding territories to the north (Dudek 2007a). Foraging observations were made during the first two protocol survey periods in 2007, but were absent during the third protocol survey period. These foraging observations were in willow-dominated riparian areas adjacent to Castac Lake, near Cuddy Creek, in Beartrap Canyon, in Rising Canyon, and along Grapevine Creek (Dudek 2007b). No breeding observations of willow flycatchers were made (Dudek 2007b).

The major threats to the willow flycatcher are loss and degradation of suitable riparian breeding habitat, due primarily to urbanization, overgrazing by livestock, and the conversion of riparian habitat to agricultural land. Much of the remaining habitat in California is at the geographic and elevation extremes reported for the species (Craig and Williams 1998). Brood parasitism by brown-headed cowbirds has also contributed to population reductions, although the little willow flycatcher subspecies appears to be affected less by cowbirds than other subspecies of willow flycatcher, including southwestern willow flycatcher, because the breeding season is later than that of the cowbird (Craig and Williams 1998).

Given their current limited breeding ranges in California, it is unknown whether either willow flycatcher subspecies would be able to shift their distributions either northward or to higher elevations in response to future climate change, such as on Covered Lands, which range from approximately 2,000 feet to 6,000 feet in elevation. However, Hitch and Leberg's (2007) analysis of North American Breeding Bird Survey data comparing the periods of 1967–1971 and 1998–2002 showed that the willow flycatcher had shifted its breeding range approximately 135 kilometers (84 miles) northward over the 26-year period between the two study periods. Although the specific factors causing this northward shift are unknown, Hitch and Leberg (2007) suggest that because 9 of 29 North American species examined showed significant northward shifts, and because similar shifts have been observed on the European continent, it is difficult to identify factors other than climate warming that could account for the shift of so many species. Based on the Hitch and Leberg (2007) study, it appears that willow flycatchers have the ability to shift their breeding range, but the limit to which they could respond to future climate change is unknown.

With small breeding populations, both subspecies of willow flycatcher are more likely to be vulnerable to stochastic environmental events (e.g., severe weather events, precipitous declines in prey, wildfire) than species with larger breeding populations that should be more resilient to such events. These unpredictable environmental events may combine with existing stressors on the species, such as habitat loss and degradation, invasive species, brown-headed cowbird nest parasitism, and potential climate change effects.

The willow flycatcher, in general, nests in willows, alders (*Alnus* spp.), and cottonwoods or other riparian deciduous vegetation (Craig and Williams 1998). The little willow flycatcher appears to prefer nesting near the edges of vegetation clumps and near streams (Sanders and Flett 1989). Southwestern willow flycatchers invariably locate nests in areas with surface water nearby (Phillips et al. 1966). These riparian vegetation communities are highly vulnerable to climate change and if they were substantially altered by hotter and drier conditions, or experienced altered hydrologic regimes such as flood frequencies, volume, and/or timing, nesting habitat, as well as migration stopover habitat, for the willow flycatcher could be degraded. Similar to least Bell's vireo, less dense riparian vegetation at nesting sites may also increase the willow flycatcher's vulnerability to nest predators; nest parasites, such as brown-headed cowbird; urban-related predators (e.g., house cats and other mesopredators such as skunks and raccoons); noise; lighting; and other abiotic factors, such as solar and wind exposure. It has been observed, for example, that grazing of willows by domestic livestock changes the willow foliage height and volume, reducing habitat quality for southwestern willow flycatcher (Taylor 1986), and it is expected that a hotter and drier climate could have similar effects, or exacerbate current stressors that degrade habitat quality. As noted previously, small breeding populations would be more sensitive to such effects than larger breeding populations. These kinds of climate-related effects on riparian habitat could occur on Covered Lands.

Willow flycatchers are insectivores; over 95% of their diet consists of insects, of which over 40% are in the family Hymenoptera (mostly wasps and bees) (Craig and Williams 1998). As described previously for the least Bell's vireo, phenological effects of climate change that may decouple important predator–prey relations could adversely affect the willow flycatcher, such as potential asynchronies in the peak prey production with peak energy needs during reproduction. These relationships and their potential responses to climate change are unknown and, therefore, specific predictions about the potential effects of climate change on willow flycatcher predator–prey relations cannot be made.

Purple Martin (*Progne subis*)

The purple martin has several characteristics of species likely to be sensitive to climate change:

- It is uncommon to rare and occurs in small populations in California.
- It appears to have undergone population declines in California, especially Southern California.
- It is a habitat specialist and its breeding habitat is likely to be affected by climate change.

Based on these characteristics, the potential negative impacts of climate change on purple martin include:

- Reduction of available nesting habitat and increased competition with invasive species such as European starlings for nest cavities
- Reduction of wetland and riparian habitats used for foraging
- Reductions in insect prey availability

Purple martins breed locally from British Columbia disjunctly eastward to Nova Scotia, southward to Baja California, central Mexico, and the Gulf Coast. Although it has a wide (albeit disjunct) distribution in North America, the purple martin is an uncommon to rare local summer resident in wooded habitats throughout California (Zeiner et al. 1990b). It is a rare migrant in spring and fall and is absent in the winter. In the south, it is now only a rare and local breeder on the coast and in interior mountain ranges, with few breeding localities (Garrett and Dunn 1981). In northern California, it is an uncommon to rare local breeder on the coast and inland (Airola 1980; McCaskie et al. 1979) and is absent from the higher slopes of the Sierra Nevada. The species' apparent absence from many potentially suitable areas in the northern Rockies, intermountain region, California, Pacific Northwest, and Mexican highlands suggests that it has specific habitat requirements that are unknown (Brown 1997).

Five to 10 pairs of purple martin were observed during focused surveys in the TMV Planning Area, including breeding observations from near Monroe Canyon, east of Rising Canyon, and west of Geghus Ridge, and foraging observations in those locations as well as near Silver and Squirrel canyons (Dudek 2007a). Active breeding nests were observed in crevices or holes in standing trees in oak woodland or oak savannah communities (Dudek 2007b; TRC 2007). Purple martin also has been observed foraging in grassland, oak savannah, and oak woodlands within the Covered Lands (Dudek 2007a; TRC 2007).

Numbers of the purple martin have declined markedly in recent decades because of the loss of riparian habitat, removal of snags, and competition for nest cavities (Remsen 1978). Garrett and Dunn (1981) concluded that the great decline of this species as a breeder in Southern California can be linked to the explosive increase in the regional population of European starlings, which compete with purple martins for nest cavities.

The localized distribution of the purple martin in California and its absence from potentially suitable areas within its broader geographic range, and in particular higher elevations, suggests that this species could be sensitive to climate change effects that reduce habitat suitability where it currently occurs. However, the current lack of understanding about specific habitat features required by this species precludes predictions about specific climate change effects. There is some evidence that this species is specifically vulnerable to climate conditions. Weather-related mortality periodically eliminates birds along the northern edge of the range, but these areas are usually reoccupied by at least a few individuals within several years (Brown 1997). Interestingly,

the purple martin's overall northern breeding range limit in Canada appears to have shifted southward in the last century. Installation of birdhouses in the middle and western Great Plains may have permitted a range expansion in recent years. However, the population along the Pacific Coast is declining (Brown 1997). Whether this apparent southward shift will change with future climate change is unknown.

Purple martin foraging activity appears to be closely tied to water sources. Individuals usually are observed in flight over grassland near water, wet meadow, and/or fresh emergent wetland (American Ornithologists' Union 1998). Their diet is composed almost entirely of flying insects, and types taken vary across season and probably depend on availability (Brown 1997). Purple martins do not appear to feed when the surface air temperature is below about 10°C (50°F) (Brown 1997). As with the other insectivorous birds discussed (least Bell's vireo and willow flycatcher), phenological effects of climate change that may decouple important predator–prey relations could adversely affect the purple martin, such as potential asynchronies in the peak prey production with peak energy needs during reproduction. In addition, a hotter and drier climate could reduce suitable water-associated foraging habitats for this species and/or the distribution and abundance of prey in these habitats. These relationships and their potential responses to climate change are unknown and, therefore, specific predictions about the potential effects of climate change on willow flycatcher predator–prey relations cannot be made.

Climate change could reduce the overall availability of suitable nest sites for the purple martin, including on Covered Lands. Kueppers et al. (2005) and Lenihan et al. (2003) indicate contractions and shifts in woodlands and forest in California. Community type modeling by Hansen et al. (2001) indicated that fir, spruce, and mountain hemlock communities may contract in the western United States, but that ponderosa pine communities may expand over the same area. In the western United States, the purple martin nests in old woodpecker cavities mostly in habitats with patches of tall sycamores, pines, spruce, fir, cypress, aspen, and other large trees in or near oak woodlands or within open coniferous forests (Garrett and Dunn 1981; Zeiner et al. 1990b). They also nest in tall, old, isolated trees and use oak on Tejon Ranch (Dudek 2007a; TRC 2007). Although the specific effects of climate change on suitable nest sites on Covered Lands for purple martin are unknown, its apparent flexibility in nest tree selection suggests that purple martins should be able to shift to different trees if there is a selective loss of some species such as blue oak (see Kueppers et al. 2005). However, more frequent or intense wildfires may reduce the overall distribution of woodlands and forests in California, including Covered Lands, thus reducing available nesting habitat within the species' breeding range. However, the more likely primary potential effect of climate change on purple martins appears to be directly on individual birds (i.e., weather-related mortality [Brown 1997]) and disturbance of predator–prey relations.

Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird has several characteristics of species likely to be sensitive to climate change:

- Its distribution is generally restricted to California.
- It exhibits substantial population fluctuations, with an apparent declining trend in population sizes.
- It is a breeding habitat specialist and its breeding habitat is more likely to be affected by climate change.
- It relies heavily on insect prey near breeding colonies

Based on these characteristics, the potential negative impacts of climate change on tricolored blackbird include:

- Reduction of available wetland breeding habitat combined with limits to making range shifts
- Incrementally increased vulnerability to existing stressors such as pesticides and other contaminants, human disturbances, and predators due to climate change that could cause further population declines
- Reduced insect prey availability

The tricolored blackbird has a relatively restricted range, breeding from southern Oregon and the Modoc Plateau of northeastern California, south through the lowlands of California west of the Sierra Nevada to northwestern Baja California (Beedy and Hamilton 1999). Most populations are restricted to the Central Valley and surrounding foothills, coastal, and some inland localities in Southern California. The species is not migratory but is nomadic and highly colonial, although little is known about the nomadic pattern (Orians 1960). Large flocks appear suddenly in areas where they have been absent for months, they breed, and then quickly withdraw; a pattern known as itinerant breeding (Orians 1960; Beedy and Hamilton 1999). Due to its restricted range, it is unlikely that it could significantly shift its range in response to climate change, and it is possible that its range could contract with the loss of suitable habitat, particularly if Southern California becomes significantly hotter and drier.

The tricolored blackbird appears to be declining through its range in California. Surveys of the tricolored blackbird indicate that while the overall geographic range of the species is little changed since the mid-1930s, populations have shown a 37% decline during a 3-year period from 1994 to 1997. The 1994 population was estimated to be approximately 370,000 breeding adults, and in 1997 the population was estimated to be approximately 233,000 breeding adults (Beedy and Hamilton 1997). Population declines are most apparent in the Central Valley of California. Although tricolored blackbirds were once abundant in Southern California, they are

now described as rare throughout this former range, except in some sections of San Diego County (Beedy and Hamilton 1999).

The tricolored blackbird has been observed nesting in wetland habitats and foraging in the southwestern portion of the TMV Planning Area around Castac Lake; the observed population was approximately 15 individuals during surveys in 2007 (Dudek 2007a).

Tricolored blackbirds are currently subject to a variety of stressors that likely are causal factors in their decline, and which could be exacerbated by climate change. Although they often change nesting locations, tricolored blackbirds require secure nesting substrates, water, and suitable foraging habitats for breeding (Beedy and Hamilton 1999). The tricolored blackbird prefers to breed in freshwater marshes with dense growths of emergent vegetation dominated by cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.), but have also established colonies in willows, blackberries (*Rubus* spp.), thistles (*Cirsium* and *Centaurea* spp.), and nettles (*Urtica* sp.). A principal factor implicated in the population decline and the loss of individual colonies is elimination of wetland habitat, which has drastically reduced available nesting and foraging habitat (Beedy et al. 1991). As far back as 1937, it was concluded that the anthropogenic-related destruction of tricolored blackbird nesting habitats was an important factor in declines in this species (Neff 1937). DeHaven et al. (1975) found fewer colonies, smaller colonies, and an overall smaller population size in California than that documented by Neff (1937). This decline has been attributed to the continued loss of suitable nesting habitat for the tricolored blackbird (DeHaven et al. 1975). Predation is also a documented source of mortality, and this problem may increase as the continued loss of wetlands and other nesting habitat forces nesting colonies into confined areas. Higher rates of nesting failures and lower reproductive success have been observed in small colonies when compared to large colonies (Orians 1960; Payne 1969). The smaller colonies resulting from reduced nesting and foraging habitat may be more vulnerable to disturbance by natural predators. These smaller colonies may also be less able to compete with other species for the limited wetland nesting habitat. A hotter and drier climate in California could further reduce suitable nesting habitat, which could increase the effects of these related threats. Poisoning, either deliberate or indirect, and increased disturbance by humans, from agriculture operations such as harvesting, have also been cited as contributing to the continued population decreases (Beedy et al. 1991). Additionally, contamination by trace elements (selenium) and pesticides are a potential cause of nesting failures (Beedy and Hayworth 1987). With a potential reduction of nesting habitat due to climate change and potentially smaller and/or fewer nesting colonies, tricolored blackbirds may have less resilience to these other threats.

In combination with these identified stressors on tricolored blackbirds, therefore, hotter and drier conditions in California could further reduce suitable wetland nesting habitat for this species and, thus, exacerbate its apparent declining population trend. As noted above, the observed population

on Covered Lands was small in 2007, suggesting a limited availability of suitable nesting habitat (although breeding populations can significantly vary from year to year). Alterations in wetland nesting habitat on Covered Lands due to climate change could reduce the on-site population.

The tricolored blackbird feeds primarily on seeds and invertebrates, and requires an abundant, concentrated supply of insects for successful breeding colonies. Observations of tricolored blackbirds indicate that they require some free water in addition to insects. Various reports also noted unexplained abandonment of entire colonies at advanced stages of nesting, which may have been caused by insufficient food supplies to support their young (Beedy and Hamilton 1999). Any adverse effects of climate change on insect prey distribution or abundance could also negatively affect nesting success.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The western yellow-billed cuckoo has several characteristics of species likely to be sensitive to climate change:

- It has a relatively restricted breeding range in the western United States.
- Its population has declined substantially and current populations are small.
- It is a breeding habitat specialist and its breeding habitat is more likely to be affected by climate change.

In addition, as an insectivorous migrant, the western yellow-billed cuckoo may be more susceptible to decoupling of important ecological relationships, such as predator–prey disruptions.

Based on these characteristics, the potential negative impacts of climate change on western yellow-billed cuckoo include:

- Reduced availability of riparian habitats
- Reduction of available prey and consequent reduced reproductive capacity
- Exacerbation of other threats that degrade habitat, such as cattle grazing

The northern limit of breeding of the western yellow-billed cuckoo in the coastal states is now in the Sacramento Valley, California and the northern limit of breeding in the western interior states is southern Idaho (66 FR 38611–38626). Within California, the western yellow-billed cuckoo is an uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations (Zeiner et al. 1990b). It breeds along the Colorado River; in the Sacramento and Owens valleys; along the South Fork of the Kern River, Kern County; along the Santa Ana River, Riverside County; and along the Amargosa River, Inyo and San Bernardino counties (Zeiner et al. 1990b). It may also nest along the San Luis Rey River, San Diego County. A focused survey

for western yellow-billed cuckoo was conducted in 2007 in all suitable/potential nesting habitat within the TMV Planning Area (Dudek 2007a). The focused survey was negative and TMV vegetation mapping did not identify areas with appropriate patch size or configuration likely to support breeding territories; therefore, the potential for western yellow-billed cuckoo to nest or forage in the TMV Planning Area is considered to be very low.

Major threats to western yellow-billed cuckoo are loss and fragmentation of riparian habitat resulting from conversion to agriculture and other uses, dams and river flow management, stream channelization and stabilization, groundwater pumping, invasion of habitat by non-native species, and livestock grazing.

The western yellow-billed cuckoo was formerly much more common and widespread throughout lowland California, but its population has been drastically reduced by habitat loss (Grinnell and Miller 1944; Gaines 1974; Garrett and Dunn 1981). Based on data collected from 1978 to 1979 and 1985 to 1986 in California, Laymon and Halterman (1987) estimated between 50 and 75 western yellow-billed cuckoo breeding pairs in California. In a review of overall population estimates north of Mexico for the western subspecies of the yellow-billed cuckoo, a total of 475 to 675 breeding pairs were estimated (Laymon and Halterman 1987). Similar to willow flycatcher, the small breeding population of western yellow-billed cuckoo in California is likely to be less resilient to stochastic events than species with larger populations. The added stress of climate change, which could also intensify some of these stochastic events, such as severe storms and increased frequency or intensity of wildfires, increasing the risk of local extirpations. More so than some other riparian bird species, including least Bell's vireo and willow flycatcher, western yellow-billed cuckoo may be sensitive to habitat loss and degradation. For breeding, the western yellow-billed cuckoo in California requires dense, wide riparian habitats with well-developed understories where humidity is high and where the dense understory abuts slow-moving watercourses, backwaters, or seeps (Garrett and Dunn 1981; Zeiner et al. 1990b). Willow is almost always a dominant component of the vegetation. In the Sacramento River Valley, this subspecies occupied home ranges varying from 20 to 100 acres or more of riparian habitat (Gaines 1974; Laymon and Halterman 1987). In arid regions, breeding cuckoos are restricted to river bottoms, ponds, swampy areas, and damp thickets, with nesting occurring in willow, cottonwood, and mesquite (*Prosopis* spp.) (Hughes 1999).

The principal causes of riparian habitat losses are conversion to agriculture and other uses, dams and river flow management, stream channelization and stabilization, and livestock grazing. Fragmentation of riparian habitat also reduces the quality of the riparian habitat for the western yellow-billed cuckoo. Fragmentation results in the loss of patches large enough to sustain local populations, leading to local extinctions and the potential loss of migratory corridors, which may affect the ability of the species to recolonize habitat patches (66 FR 38611–38626). Habitat

fragmentation in California has been shown to exclude individuals where patch size is less than 328 feet by 984 feet (Hughes 1999). Hotter and drier conditions in California, as well as hydrologic alterations (e.g., frequency, timing or seasonality, and volume of flows) along major river courses currently used for nesting by the western yellow-billed cuckoo could result in loss and fragmentation of the large, dense patches of riparian habitat required by the cuckoo for nesting. As noted above, at present the Covered Lands do not appear to have riparian patches of adequate size or configuration to support breeding territories for this species. Thus, climate change impacts on the Covered Lands may not impact yellow-billed cuckoos. However, hotter and drier conditions on Covered Lands in the future would probably reduce the likelihood of western yellow-billed cuckoo nesting on site.

Like the other riparian birds discussed above, the western yellow-billed cuckoo is an insectivore. It primarily takes large insects, including cicadas, katydids, and caterpillars (Hamilton and Hamilton 1965). Phenological effects of climate change on predator–prey relations could negatively affect the nesting success of this species.

White-Tailed Kite (*Elanus leucurus*)

The white-tailed kite has several characteristics of species likely to be sensitive to climate change:

- Populations may be declining within its range in California, although they appear to be stable or increasing elsewhere.
- It uses nesting and roosting habitats that may be more affected by climate change.
- It has more specialized feeding habitats than many other raptor species.

In addition, as an insectivorous migrant, the yellow warbler may be more susceptible to decoupling of important ecological relationships, such as predator–prey disruptions.

Based on these characteristics, climate change could have an adverse effect on populations in the state and on Covered Lands for two possible reasons:

- Reduction of woodland and forest nesting habitats due to habitat conversion
- Reduced reproduction if prey availability is reduced

Although threatened with extinction in North America during the early twentieth century, the white-tailed kite has recovered since then, expanding its range in the United States from small portions of California, Texas, and Florida to Oregon and Washington as well as into the middle portions of North America (Eisenmann 1971). Prior to the 1960s, this species occurred in low numbers across much of its range. Population decreases appeared to be common during this time, especially in Mexico and Central America; however, since 1960, the population status and range

of this raptor in North America have improved markedly. The white-tailed kite has also rapidly colonized habitats throughout much of Central America in previously uninhabitable regions (Eisenmann 1971).

California is still considered to be the breeding range stronghold for the white-tailed kite in North America. It is a common to uncommon, year-long resident in coastal and valley lowlands, rarely found away from agricultural areas (Grinnell and Miller 1944). The kite is still common in the Central Valley of California and along the entire length of the coast, with nearly all areas up to the western Sierra Nevada foothills and southeastern deserts occupied (Small 1994; Dunk 1995).

A focused survey was conducted in 2007 for white-tailed kite within the TMV Planning Area to search for nests (Dudek 2007a). One white-tailed kite was observed foraging in the TMV Planning Area on several occasions. No nests were observed during this focused survey, which was not unexpected the survey area is above the species' typical breeding elevation. During other various surveys conducted in portions of the Covered Lands, white-tailed kite has been observed foraging in grasslands, agricultural areas, and wetland habitats adjacent to Castac Lake and along Grapevine Creek (Dudek 2007a; TRC 2007). No nesting sites or immature individuals have been have observed. It is assumed, therefore, that the white-tailed kite's use of Covered Lands is limited to foraging. While the white-tailed kite has extended its range and increased its numbers in California in recent decades (Eisenmann 1971), it is still thought to be under stress and may be in decline again. Although populations rebounded from earlier declines in the last century, recent population declines may be related to reductions in the prey base due to the conversion of natural or agricultural lands to urban or commercial land uses. Other threats to kite populations include: clean farming techniques that leave few residual vegetation areas for prey; increased competition for nest sites with other raptors and corvids; the loss of nest trees; and increased disturbances at the nest (Dunk 1995). A relatively long-term drought throughout California during much of the time period from 1982 to 1991 also may have contributed to population declines during that time and for years afterward (Dunk 1995). This latter observation suggests that this species may be sensitive to climate change that increases drought periods. As discussed below, foraging activity on Covered Lands could be affected if hotter and drier conditions reduce available prey for the white-tailed kite.

White-tailed kites typically nest in woodlands, but also in isolated trees. Nest tree species are variable, with more than 20 species on record as having been used by the white-tailed kite. The tree structure apparently is the most important determinant for use for the nest site (Dunk 1995). Although the white-tailed kite may nest and roost in a variety of tree species, overall loss of woodland and forest due to hotter and drier conditions and more frequent or intense wildfires may reduce suitable nesting and roosting habitat for the species.

The white-tailed kite preys mostly on voles (*Microtus* spp.) and other small, diurnal mammals, and occasionally on birds, insects, reptiles, and amphibians. It preys on small mammals approximately 95% of the time and can be considered a small mammal specialist (Dunk 1995). White-tailed kite populations often vary in direct response to changing vole and rodent populations, and kites are believed to become nomadic during low-abundance population cycles of California voles (*Microtus californicus*) and small mammals (Dunk and Cooper 1994). Voles tend to be associated with denser grasslands, wet meadow, and early successional montane riparian communities (Zeiner et al. 1990c), so increasing aridity could negatively affect the habitat of this important prey species for the white-tailed kite. If hotter and drier conditions on Covered Lands in the future reduced grassland density, prey density and availability could be affected due to loss of suitable habitat. In addition, hotter and drier conditions could reduce rodent populations, including through lower production of offspring, increased mortality rates, and competition for resources. Nest sites are also closely associated with suitable foraging habitat with high rodent populations in the immediate vicinity of the nest. Erichsen et al. (1996) described how successful nests are more often than not surrounded by preferred foraging habitat (particularly agriculture) within a 0.5-mile radius of the nest; Hawbecker (1942) noted that during the breeding season, kites seldom forage farther than a 0.5-mile radius from the nest site; and Faanes and Howard (1987) also noted that within the 0.5-mile radius, there must be at least 50 acres of suitable foraging habitat to support a breeding pair of kites. These observations of the relationship between a nest site and distance moved to suitable foraging habitat suggest that the kite may be very sensitive to prey abundance and may not have the flexibility to forage much farther from the nest site when prey availability is low. Whether the white-tailed kite could successfully switch to other prey in the absence of an abundant vole population or other small mammals is unknown.

At this time white-tailed kite is not expected to nest on Covered Lands because the area is above its typical nesting elevation limit. However, if an altitudinal shift in nest site selection occurred as a result of climate (see Parmesan 2007), white-tailed kites may attempt to nest on Covered Lands. This possibility, however, could be counteracted by a reduction in prey within flying distance of suitable nest sites.

Yellow Warbler (*Dendroica petechia brewsteri*)

The yellow warbler has several characteristics of species likely to be sensitive to climate change:

- It has exhibited population declines in California, although it appears to be globally secure.
- It is a breeding habitat specialist and its breeding habitat is more likely to be affected by climate change; however, it may be able to shift breeding activity to some non-preferred habitat.

Based on these characteristics, the potential negative impacts of climate change on yellow warbler include:

- Reduced availability of riparian habitats
- Reduction of available prey and consequent reduced reproductive capacity
- Exacerbation of other threats that degrade habitat, such as cattle grazing

Yellow warblers are broadly distributed, nesting from northern Alaska eastward to Newfoundland and southward to northern Baja California and Georgia. In California, the yellow warbler is an uncommon to common, summer resident in the north and locally common in the south (Zeiner et al. 1990b). Within California, the subspecies *D. p. brewsteri*, which is the subspecies likely to occur on Covered Lands, is thought to have declined. Populations in the southwestern United States have declined dramatically in recent decades in many lowland areas (southern coast, Colorado River, San Joaquin and Sacramento valleys) (Lowther et al. 1999). The yellow warbler is now rare to uncommon in many lowland areas where formerly it was common (Lowther et al. 1999). Due to its imperiled ranking in California, this subspecies is more likely to be vulnerable to climate change effects than species that are more common and occur in larger populations.

Yellow warblers in southern California usually breed in lowland and foothill riparian woodlands dominated by cottonwoods, alders, willows, and other small trees and shrubs typical of low, open-canopy riparian woodland (Garrett and Dunn 1981). They tend to nest in locations of intermediate height and shrub density. Breeding generally occurs west of the Sierra Nevada to the coastal slopes of Southern California, and from coastal and desert lowlands up to 8,000 feet in the Sierra Nevada and other montane chaparral and forest habitats (Lowther et al. 1999). The yellow warbler also breeds in montane chaparral, open ponderosa pine, and mixed conifer habitats with substantial amounts of brush (Zeiner et al. 1990b). Breeding in montane shrubs and conifers is perhaps a recent phenomenon (Gaines 1977).

Yellow warblers were observed in 2007 in the southwestern and central portions of the TMV Planning Area, near Castac Lake and along Bear Trap Canyon during the breeding season (Dudek 2007a). Five territories were recorded in the TMV Planning Area based on the presence of singing males.

Yellow warblers are sensitive to habitat degradation and fragmentation and brood-parasitism by brown-headed cowbirds (Lowther et al. 1999). Nest predation was found to be the major cause of nest failure in a group of species in Alaskan wetlands including yellow warblers (Lowther et al. 1999). Habitat fragmentation, especially intense grazing where willow growth along riparian habitats is reduced or removed, has had a major impact on populations in the western U.S.

Populations along the stretch of the Salinas River in Monterey County declined 50% in 1980s; the decline was attributed to loss of riparian habitat and increase of brown-headed cowbirds (Lowther et al. 1999). Management of cattle grazing in the western U.S. to maintain willow borders of riparian habitats helped to maintain yellow warbler populations (Taylor and Littlefield 1986). In southeast Arizona, the yellow warbler population density increased six fold within two to three years after the cessation of livestock grazing in riparian habitat (Lowther et al. 1999).

With the documented adverse effect of habitat degradation and fragmentation on yellow warblers, a hotter and drier climate could exacerbate habitat degradation and fragmentation, possibly having similar effects to overgrazing where willow growth is reduced and suitable nesting habitats become depauperate and more fragmented. These kinds of effects could occur on Covered Lands with a hotter and drier climate. However, unlike the other riparian birds discussed above – least Bell's vireo, willow flycatcher, and yellow-billed cuckoo – the yellow warbler appears to have somewhat broader nesting habitat requirements and possibly greater flexibility in responding to climate change effects on nesting habitat. It has been documented to nest in montane chaparral and conifers (Zeiner et al. 1990b). However, it cannot be expected that non-riparian breeding habitats are optimum for the yellow warbler.

The yellow warbler feeds primarily on insects and other arthropods. As with the other insectivorous birds discussed above, the yellow warbler may experience disturbances in predator–prey relationships resulting from altered phenologies.

5.2.3 Mammals

As discussed in Section 3.2.1 of this appendix, climate change responses and issues related to mammals include:

- Changes in abundance and taxonomic community structure
- Impacts on reproduction such as timing of breeding, fertility, fecundity, development and juvenile mortality
- Latitudinal and elevational range shifts and contraction and expansions of ranges
- Genetic and behavioral changes
- Rates of disease transmission.

Ringtail (*Bassariscus astutus*)

The ringtail has one characteristic of species likely to be sensitive to climate change:

- It is associated with riparian habitat and water sources that are more likely to be affected by climate change.

However, the ringtail also has two characteristics of species less likely to be sensitive to climate change:

- It has a broad geographic distribution in the southwestern United States and California.
- Its populations within its broader range appear to at least be stable, although it appears to have declined in some areas.

Based on these characteristics, the main effect of climate change on ringtail could be extirpation from portions of its range in California where riparian and water resources become degraded. If present on the Covered Lands, it would likely occur at very low population densities and would be sensitive to adverse changes to water sources on the Covered Lands. .

The ringtail is found in the southwestern United States, in the states of Oregon, California, Nevada, Utah, Colorado, Kansas, Arizona, New Mexico, Oklahoma, and Texas. The ringtail is widely distributed in California where it is a locally common to uncommon permanent resident (CDFG 2005). Its range includes most of California, with the exception of the extreme northeast corner of the state and southern portions of the San Joaquin Valley. Orloff (1988) extended the range of the ringtail to include the Mojave and Colorado deserts, Sacramento Valley, northern portions of the San Joaquin Valley, northern Mono County, the high Sierra Nevada south of Lake Tahoe, and northeastern portions of the state. Occurrence reports described by Orloff (1988) suggest that ringtails are most abundant along riparian areas in northern California and the Sierra Nevada foothills. Ringtails can be found at elevations of up to 9,500 feet, but are most common at elevations between sea level and 4,600 feet.

Ringtails live in a variety of habitats within their range, but have a strong preference for rocky areas such as rock piles, stone fences, canyon walls, and talus slopes (Davis and Schmidly 2007). Suitable habitat for ringtails consists of various riparian habitats, due to increased availability of food supply, and a mixture of forest and shrubland in close proximity to rocky areas and water resources (CDFG 2005). Ringtails occur in semi-arid country, deserts, chaparral, oak woodlands, pinyon pine woodlands, juniper woodlands, and montane conifer forests (Poglayen-Neuwall and Toweill 1988). However, ringtails rarely occur farther than 0.6 mile (1 kilometer) from permanent water (CDFG 2005).

A focused survey for ringtails was conducted in the TMV Planning Area in 2007 using camera/scent station surveys, but the results were negative (Dudek 2007a). The large majority of potential habitat for ringtail on Covered Lands occurs in the TMV Planning Area. Based on the negative results of the extensive camera/scent station surveys in the TMV Planning Area, climate change impacts on the Covered Lands may not impact the ringtail. If ringtail is present on Covered Lands, it would only occur in a low population density, and any climate change-related

impacts would be limited to a small number of individuals. Further, significant degradation of water sources on the Covered Lands are unlikely due to the protections of the MSHCP.

Given its broad distribution in California in a variety of climate zones, it appears that the ringtail has adapted to a range of habitat conditions and would be able to respond effectively to climate change effects as long as key habitat features are present (rocky areas, talus slopes, and permanent water sources). The key habitat factor that suggests a potential sensitivity to climate change, however, is its strong association with permanent water. Ringtails therefore may experience some habitat loss with a hotter and drier future climate in California where hydrologic conditions change. In addition, increased and more intense wildfires could degrade or reduce the amount of suitable habitat for this species because riparian habitat and water courses could be degraded due to the direct effects of fires on vegetation and increased erosion and sedimentation.

There is very little information available to directly assess the current threats to ringtails. However, the close association of ringtails to riparian habitats and permanent water sources, combined with the extensive loss and fragmentation of such habitats throughout its range over the last 150 years through urbanization and agricultural conversion, would suggest that the population size of ringtails has declined in more developed areas of California. Climate change effects, coupled with ongoing conversion of potential habitat, may contribute to declines in some areas of California. Based on current information, it appears that the ringtail is not present on Covered Lands. It is unknown why the ringtail is not present, but hotter and drier condition on Covered Lands could reduce the likelihood of ringtail occupation on site if water sources are reduced below current conditions.

Ringtails are omnivores and primarily forage for rodents (woodrats, mice, and squirrels), rabbits, hares, carrion, and arthropods (Orthoptera, Coleoptera, and Lepidotera). They also may take birds (usually small passerines), snakes, frogs, fish (Poglayen-Neuwall and Toweill 1988), berries, and fruits (Belluomini 1980). Their omnivorous diet likely would make ringtails relatively less sensitive to potential climate change effects on their food sources because they should be able to shift their foraging to what food sources are available at a particular time.

Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*)

The Tehachapi pocket mouse has two characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic distribution.
- It likely occurs in small, local populations.

However, as described below, pocket mice as a group are adapted both physiologically and behaviorally to arid areas with ephemeral resources, and therefore may be relatively resilient to a hotter and drier climate. Substantial impacts to this species from climate change are not anticipated, although small, isolated populations are inherently at higher risk of local extinctions. Climate change could contribute to this risk.

The Tehachapi pocket mouse is known from a few scattered localities in the Tehachapi Mountains, from Tehachapi Pass on the northeast to the area of Mt. Pinos on the southwest, and around Elizabeth, Hughes, and Quail lakes on the southeast. It has been recorded between 3,500 and 6,000 feet in elevation. A survey of a number of historical Tehachapi pocket mouse locations in the 1980s failed to record any Tehachapi pocket mouse individuals (Laabs 2008).

Focused trapping surveys were conducted in representative suitable/potential habitat within the TMV Planning Area (Dudek 2007a). Tehachapi pocket mouse was detected in the southeastern portion of the TMV Planning Area between Oso and Dark canyons near the southern border of the site during various surveys. These occurrences were non-native grasslands and open oak woodlands adjacent to scrub communities and coniferous/oak communities, specifically those with a California juniper component. All of the occurrences in the TMV Planning Area are within the Antelope–Fremont Valley watershed, and focused studies seem to indicate that this is the northerly limit of the species' range. The ridgeline above the Antelope–Fremont Valley watershed occurrences, along with apparently unsuitable habitats, appears to pose significant obstacles to expansion of range. Therefore, Tehachapi pocket mouse is not expected to occur north of this watershed boundary.

The Tehachapi pocket mouse is most likely threatened by habitat fragmentation and isolation caused by increased urbanization and agricultural intensification. The two factors of small range and small scattered populations alone predispose this species to higher risk of extinction compared to species with broader and/or large populations. Its small geographic distribution and small populations suggest that it could be sensitive to climate change. There is little species-specific information available on the life history of Tehachapi pocket mouse which could indicate its potential response to climate change. However, like other members of the genus *Perognathus,* the Tehachapi pocket mouse is a nocturnal granivore that probably feeds under and around shrubs on a variety of grass seeds, as well as herbaceous plant material and insects (Verts and Kirkland 1988; CDFG 2005). Other members of this species group are thought to aestivate underground during very hot weather and hibernate in cold weather (CDFG 2005; Laabs 2008). Therefore, Tehachapi pocket mouse probably has both behavioral and physiological adaptations to climate extremes that would allow it to respond to a hotter and drier climate. Heteromyids (pocket mice, kangaroo rats, and kangaroo mice), as a group, are well adapted to harsh, arid environments, and have evolved various physiological adaptations to cope with harsh,

unpredictable conditions, such as enhanced energy and water conservation, and seasonal dormancy and topor (French 1993; Forman and Phillips 1993). Their surface activity related to foraging and other important activities such as reproduction also reflect the requirements of their ephemeral environments, such as collecting and caching seeds to compensate for periods where food availability is low (Reichman and Price 1993). A potential limiting factor for this species under a hotter and drier climate regime on Covered Lands would be a severe lack of food resources during prolonged drought that may exceed the Tehachapi pocket mouse's ability to cope with extended lack of food. Also, a prolonged drought or more frequent and intense wildfires could reduce shrub cover and plant diversity, reducing food resources over the long term. Prolonged drought may temporarily reduce reproductive activity in Merriam's kangaroo rat (*Dipodomys merriami*) (Behrends, unpublished data). Although heteromyid rodents tend to be longer-lived than many other rodent species occurring in mesic environments (thus foregoing reproduction for one or more years is not as critical), a drought of several consecutive years could exceed the typical life expectancy of the species and stress small, local populations.

5.2.4 Insects

As discussed in Section 3.2.1 of this appendix, climate changes responses and issues related to insects include:

- Larval development related to food sources
- Responses to extreme weather events
- Advanced timing of migrations and desynchrony with food production
- Interactions of habitat loss and climate change

Valley Elderberry Longhorn Beetle (*Desmocerus californicus*)

The valley elderberry longhorn beetle has several characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic distribution.
- It occurs in small populations.
- It appears to be undergoing population declines.
- It is a habitat specialist and its habitat is more likely to be affected by climate change.

Based on these characteristics, the potential negative impacts of climate change on valley elderberry longhorn beetle include:

- Reduced availability, size, and fragmentation of riparian (elderberry) habitats

- Altered timing of flower production related to emergence, feeding and mating
- Exacerbation of habitat degradation such as by cattle and deer browsing

The valley elderberry longhorn beetle is endemic to the Central Valley of California, where it only occurs in association with its host plant elderberry (*Sambucus* spp.) (Barr 1991; Collinge et al. 2001). The elderberry tree is associated with riparian forests that occur along rivers and streams in the Central Valley. Historically, valley elderberry longhorn beetle was believed to have been restricted to an area of approximately 186 by 62 miles in the lower Sacramento and upper San Joaquin Valleys (Collinge et al. 2001). At the time of its Federal listing as threatened in 1980, valley elderberry longhorn beetle was known from less than 10 locations (USFWS 2007). At present there are approximately 190 records for valley elderberry longhorn beetle, primarily thought to be due to increased survey efforts (USFWS 2006b). Based on Barr's (1991) survey, the only surviving valley elderberry longhorn beetle populations occur in isolated and scattered localities from Redding in Shasta County south to the Bakersfield area. The valley elderberry longhorn beetle, a wood borer, is completely dependent on elderberry, a common shrub of riparian forests and adjacent upland habitats in California's Central Valley (Barr 1991; USFWS 1999; USFWS 2006b).

Elderberry shrubs were mapped within the TMV Planning Area in 2007 and exit-hole surveys were performed on all suitable shrubs (Dudek 2007a). Survey results were negative for presence of valley elderberry longhorn beetle. There are no known occurrences of valley elderberry longhorn beetle in the Covered Lands.

The main threats to the beetle include loss and alteration of habitat by agricultural conversion; overgrazing; levee construction, stream and river channelization, removal of riparian vegetation, and riprapping of shoreline; non-native animals, such as the Argentine ant; and recreational, industrial, and urban development (Talley et al. 2006a; USFWS 2006b; Talley et al. 2007). The limited geographic range, high habitat specificity, limited dispersal ability, and small local populations of this species make it especially vulnerable to extinction by stochastic events (Talley et al. 2006b).

Three factors – limited geographic distribution, small isolated localities, and a single genus riparian host plant – suggest that the valley elderberry longhorn beetle would be sensitive to climate change. A hotter and drier climate could reduce suitable patches of elderberry within the beetle's range, further fragmenting and isolating populations and increasing the chance of local extinctions. Reduced elderberry could occur on Covered Lands with a hotter and drier future climate, further reducing the likelihood of the species occurring on site.

The valley elderberry longhorn beetle's life history also indicates that it could be sensitive to climate change. The timing of adult emergence is closely linked to the time when elderberrys produce flowers between March and mid-May (Collinge et al. 2001). Adults live only for a number of days to a few weeks, mating and feeding on the leaves, flowers, and nectar of the elderberry (Collinge et al. 2001). This tight coupling between adult emergence and flowering of its host plant indicates that any asynchrony of this relationship due to climate change could adversely affect reproduction by the valley elderberry longhorn beetle. Also, dispersal ability is thought to be very limited in valley elderberry longhorn beetle, with Talley et al. (2007) suggesting that adults move less than 164 feet (50 meters) from the sites at which they emerge. Similarly, Collinge et al. (2001) found that within-drainage turnover was relatively high, while between-drainage turnover was rare, again suggesting that dispersal ability is limited. This limited dispersal probably would limit its ability to shift its range in response to climate change; i.e., it may not be able to track climate change rapidly enough to adapt to a changed environment, particularly if suitable elderberry patches were reduced in size and amount and separated by longer distances.

Changes in foraging patterns by herbivores related to climate change also could negatively affect the valley elderberry longhorn beetle. Overgrazing by cattle and deer, which readily forage on elderberry, also may negatively impact populations (USFWS 1984). If climate change reduces forage for cattle and deer, including on Covered Lands, they may browse more frequently on elderberry. As valley elderberry longhorn beetles are more common in denser, mature stands of elderberry, overgrazing and thinning of these stands could lead to a decrease in the number of valley elderberry longhorn beetles, while direct grazing damage to the elderberry plants could be destructive to the larval and pupal stages of the species (Barr 1991).

5.2.5 Plants

As discussed in Section 3.2.1 of this appendix, climate responses and issues related to plants include:

- Length of growing season
- Altered precipitation and hydrologic conditions
- Altered plant-insect relationships
- Limited dispersal capability, especially by endemic species.

Fort Tejon Woolly Sunflower (*Eriophyllum lanatum* var. *hallii*)

Fort Tejon woolly sunflower has two characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic distribution
- It occurs in small populations.

Based on these characteristics, the potential negative impacts of climate change on Fort Tejon woolly sunflower include:

- Alteration of microhabitats/microclimates
- Exacerbation of habitat degradation by cattle grazing.

Fort Tejon woolly sunflower has a relatively narrow distribution limited to the southern Tehachapi Mountains (near Fort Tejon) and occurs in Kern, Ventura, and Santa Barbara counties at elevations between 3,600 and 5,000 feet. While this species is narrowly distributed, its known habitat associations are fairly broad. Its general habitat is openings in chaparral and cismontane woodland on slopes with loamy soils. It is unknown why Fort Tejon woolly sunflower has a small geographic and elevational range, but it occurrence does not appear to be particularly limited by a specific habitat type.

With the exception of the Tejon Ranch population, known populations generally are small, ranging from about 37 individuals plants in a population in the Los Padres National Forest to about 850 individuals in a population in Santa Barbara County. Within the TMV Planning Area, 36 occurrences totaling 3,000 to 8,000 individuals were documented in 2007 (Dudek 2007b). It is a California Native Plant Society (CNPS) List 1B.1 taxon that is considered to be seriously endangered in California. Road construction and maintenance, erosion, and development are considered threats to specific populations of Fort Tejon woolly sunflowers (CNPS 2008; CDFG 2008). In addition, the Fort Tejon woolly sunflower is threatened by grazing and trampling by cattle and livestock (CNPS 2008). The large flower heads of the various taxa within the *Eriophyllum lanatum* complex attract a variety of potential pollinators, including beetles, several species of bees, syrphid flies, and lepidoptera (Mooring 1975). With this variety of potential pollinators, it is likely that Fort Tejon woolly sunflower would be relatively less sensitive to potential insect-pollinators disruptions due to climate change compared with other species with more restricted co-evolved relations with pollinators.

Although Fort Tejon woolly sunflower appears to have relatively broad habitat requirements and may be pollinated by a variety of insects, its narrow geographic and elevational ranges indicate

unknown factors such as microclimate factors that may be limiting its distribution and population sizes. Given the existing threats listed above, climate change could exacerbate some existing threats to this species. For example, grazing and trampling could become more of a threat if grazing resources are reduced and cause cattle to overgraze areas that are occupied by the species.

Kusche's Sandwort (*Arenaria macradenia* var. *kushei*)

Kusche's sandwort has several characteristics of species likely to be sensitive to climate change:

- It has a restricted geographic distribution.
- It occurs in small populations.
- It may have limited pollinators and low dispersal capability.

Based on these characteristics, the potential negative impacts of climate change on Kusche's sandwort include:

- Impacts on pollinators
- Potential extirpation of small local populations due to limited ability to make range shifts

Kusche's sandwort has a very limited geographic distribution of several small populations on Liebre Mountain (CDFG 2008; Stephenson and Calcarone 1999) and within the TMV Planning Area (Dudek 2007b). Documented populations range from 5 plants to 650 plants. The seven distinct occurrences in the TMV Planning Area totaled approximately 24 individuals (Dudek 2007b). Kusche's sandwort may be threatened by land management activities, road maintenance, and vehicles (CNPS 2008). Although these kinds of activities are not affected directly by climate change, because known populations are highly restricted and small, Kusche's sandwort may be sensitive to stochastic change, which may be exacerbated by climate change and additive to other threats to the species.

Pollinators for Kusche's sandwort are not known, but for a related species – *Arenaria serpyllifolia* – ants were the primary pollinator (Mayer and Gottsberger 2002). Its dispersal capability also is not known, but a related species – *Arenaria norvegica* var. *anglica*) is known to have low dispersal ability (Yorkshire Dales National Park Authority 2008). The potential combination of limited pollinators and low dispersal ability suggest that this species may be sensitive to climate change effects on potential pollinators and may be unable to respond to climate change by shifting its distribution if currently occupied habitat becomes unsuitable.

Round-leaved Filaree (*California macrophylla*)

Round-leaved filaree has several characteristics of species likely to be sensitive to climate change:

- It is rare in southern California.
- Its populations apparently are declining, especially in southern California.
- It is associated with habitat factors that are patchily distributed.
- Its life history is strongly affected by climate conditions and wildfire.

Based on these characteristics, the potential negative impacts of climate change on round-leaved filaree include:

- Negative response to changes in precipitation and temperature
- Reduced establishment in response to increased fire frequency or intensity
- Increased competition with invasive grasses and weeds
- Exacerbation of habitat degradation such as by feral pigs and cattle grazing
- Extirpation of small local populations due to likely limited ability to make range shifts

Overall, round-leaved filaree has a broad geographic distribution, ranging from northern Mexico to Oregon and Southern Utah, including 27 counties in California ranging from Lassen County to San Diego County. Approximately 105 unique populations have been reported in California. Populations generally occur below 4,000 feet, but round-leaved filaree was recorded between 4,200 and 4,600 feet on Covered Lands during rare plant surveys in 2007 (Dudek 2007b). It is associated with clay soils in cismontane woodland and valley and foothill grassland. It is a CNPS List 1B.1 species and considered to be seriously endangered in California and very rare in southern California (Reiser 2001). Overall threats to this species or reasons for decline include urbanization, habitat alteration, vehicles, pipeline construction, feral pigs, non-native plants, and, potentially, grazing (CNPS 2008).

Round-leaved filaree may be particularly sensitive to climate change effects due to its life history characteristics. It is an annual or biennial species whose populations fluctuate annually in response to precipitation frequency, timing, duration, and amount, and also to temperature. Although the specific effect of long-term changes in these factors with climate change is unknown, it is reasonable to assume that round-leaved filaree will be sensitive to any significant change in climate. Round-leaved filaree also has a complex response to fire. Gillespie and Allen (2004) found that establishment was reduced after fire disturbance even though seed production increased. Round-leaved filaree, however, does respond favorably to removal of non-native grasses by fire or weeding (Gillespie 2003). Existing potential threats on Covered Lands to this species include feral pigs and grazing, and possibly non-native plants. These threats could be

exacerbated by climate change if, for example, grazing resources are reduced and cattle overgraze and trample areas that are occupied by the species. Increased frequency and/or intensity of wildfires could promote invasions of occupied habitat on Covered Lands.

The round-leaved filaree's reproductive strategy and dispersal ability also suggest potential sensitivity to environmental change. Round-leaved filaree self-pollinates and flowers are open for only one day; it does not appear to depend on pollinators or seed dispersers (Gillespie 2003). Mature fruiting bodies can disperse up to five feet from the parent plant in the absence of wind. Given that the species is restricted to patches of clay soils, it is likely that its dispersal capabilities in association with climate change would be limited; the loss of friable clay microhabitats may account for its limited distribution in southern California (Reiser 1994).

Striped Adobe Lily (*Fritillaria striata*)

Striped adobe lily has several characteristics of species likely to be sensitive to climate change:

- It has a narrow geographic range.
- Its populations may be declining.
- It is associated with habitat factors that are patchily distributed.
- Its life history is strongly affected by climate conditions.

Based on these characteristics, the potential negative impacts of climate change on striped adobe lily include:

- Negative response to changes in precipitation
- Impacts on pollinator
- Increased competition with invasive grasses and weeds
- Exacerbation of habitat degradation such as by cattle grazing
- Extirpation of small local populations due to likely limited ability to make range shifts

The striped adobe lily is endemic to the southern Sierra Nevada foothills of eastern Tulare and Kern counties (CDFG 2000). At least 23 extant populations of this species are known, all from Kern County (CDFG 2008). The striped adobe lily is also a CNPS List 1B.1 species that is considered to be seriously endangered in California.

The striped adobe lily occurs in cismontane woodland and in valley and foothill grassland habitats (CDFG 2008). More specifically, it has been documented in blue oak woodland and non-native grassland habitats (63 FR 177). Striped adobe lily is restricted to heavy, usually red, clay soils, but the physiological and/or ecological basis for this restriction is not known (Stebbins 1989).

As of 1999, the population status of striped adobe lily was unknown because data were not available. However, the largest documented population of striped adobe lily occurs in Kern County about 1 mile northeast of Long Tom Mine in the Pine Mountain U.S. Geological Survey quadrangle. About 100,000 individuals were documented in this population in 1990, and densities near the center of the occurrence ranged from five to nine plants per square foot between 1998 and 2001 (CDFG 2008). The striped adobe lily was not observed in the TMV Planning Area in 2007 (Dudek 2007b), but there are three CNDDB records of the species in the northern portion of the Covered Lands near Tejon Hills (CDFG 2008).

The striped adobe lily is thought to be threatened by agriculture, urbanization, road maintenance activities, and non-native plants (CNPS 2008; CDFG 2000). Heavy grazing has also directly negatively impacted some populations (CDFG 2000), but the impact of grazing on the lily is not understood (Stebbins 1989). Stebbins (1989) suggested that striped adobe lily may benefit from light to moderate levels of grazing prior to early to mid-February (but after seed dispersal) due to the effects that grazing has on reducing non-native competitors, such as non-native annual grasses. Climate change could negatively affect this species on Covered Lands if cattle overgraze and trample occupied habitat or invasion by non-native species is facilitated by increased fire frequency and/or intensity.

Striped adobe lily may be sensitive to precipitation patterns. The species grows (vegetatively) slowly from November through January and its reproductive phenology is correlated with rainfall patterns. The size and total number of flowers per plant are greatly affected by the amount and timing of winter rains (Stebbins 1989). Changes in precipitation patterns therefore may have significant effects on this species.

No striped adobe lily seedlings have been reported, suggesting that reproduction may primarily be vegetative, which would also account for the species' limited distribution. Stebbins (1989). However, the reproductive ecology and specific pollinating mechanisms of striped adobe lily are not understood. Stebbins (1989) suggests that the pollination ecology of striped adobe lily may be similar to other members of the lily family in the region (Stebbins 1989). *Fritillaria* spp. with large nectaries are typically pollinated by wasps and *Fritillaria* spp. with normal-sized nectaries are typically pollinated by bumblebees (Tamura 1998); striped adobe lily nectaries are considered large according to the measurements established by Tamura (1998). This potential dependence on a limited pollinator suggests that striped adobe lily may be sensitive to any climate effects on plant-pollinator relations.

Tehachapi Buckwheat (*Eriogonum callistum*)

Tehachapi buckwheat has two characteristics of species likely to be sensitive to climate change:

- A narrow geographic range
- Habitat factors that are patchily distributed.

A lower risk characteristic of Tehachapi buckwheat is that its life history that may be more suited to a drier climate than some other species that are potential competitors for space and nutrients. However, its close association with limestone many limit its ability to disperse.

Compared to the other plant Covered Species (except Tejon poppy), Tehachapi buckwheat may be relatively less sensitive to climate change with regard to precipitation and temperature changes. However, its narrow range and patchy distribution suggest that it may have limited ability to shift ranges in response to climate change if necessary, resulting in an increased risk of extirpation.

Tehachapi buckwheat is a newly described perennial in the Buckwheat family (Polygonaceae) (Reveal 2006), and is known only from the area immediately in and around the south central portion of the Covered Lands. In the TMV Planning Area, Tehachapi buckwheat was observed in 31 occurrences representing approximately 500 to 600 individuals (Dudek 2007b). It is a CNPS List 1B.1 species considered to be seriously endangered, although there are no documented current threats to the species and the populations on the Covered Lands appear be secure. Tehachapi buckwheat was observed on Covered Lands on limestone between 4,400 and 5,410 feet in elevation (Dudek 2007b; Intermap Technologies Inc. 2005). The majority of these plants were observed in openings in chaparral on gravelly loam or rock outcrop complex (Dudek 2007b; U.S. Department of Agriculture 1981).

There are no specific life history data for Tehachapi buckwheat to determine its potential response to climate change, but a related species - Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*) - appears to be intolerant of excessive shading and is "very competitive on sites where tall and fast-growing species are excluded by moisture deficiencies, wind and winter cold." (Sanders 2008). In addition, the wool on the leaf surface of Kern buckwheat may indicate that the species is better adapted to conserve water because the wool creates a layer of air that minimizes water loss due to wind (Sanders 2008). Tehachapi buckwheat also has a thick layer of wool on its leaf surface, suggesting a similar adaptation and indicating that may be capable of persisting in a drier future climate. However, an alternative hypothesis is that the thick layer of wool on the leaf surface is a mechanism for trapping fog droplets, which may make it more vulnerable to warmer, drier climates (B. Preston, pers. comm. 2010). Additional study is needed to understand the function of leaf surface wool and how the species may response to drier

conditions. Nonetheless, Tehachapi buckwheat may be more threatened by increases in local water conditions due to potential competition with fast-growing species. Also, water and moist conditions attract Argentine ants which displace native ant species that could be important seed dispersers or pollinators (Holway et al. 2002; Suarez et al. 1998). Drier and hotter conditions may discourage the invasion of Argentine ants into areas supporting Tehachapi buckwheat.

Tehachapi buckwheat may be pollinated by a variety of beetles and ants (Dudek 2007b). Based upon pollination syndromes (Howe and Westley 1988; U.S. Forest Service 2008) and site observations (Dudek 2007b), it is most likely that this species is pollinated by beetles and ants, but no data are available regarding pollinators for this species. Very little else is known about the natural history of this species. Dispersal information is not available for this species but Stokes (1936) found that *Eriogonum* spp. seeds are dispersed by animals, streams, wind, and rain. This potential flexibility in dispersal mechanisms suggests that dispersal ability probably would not be a limiting factor related to climate change.

Based on information for other *Eriogonum* species, it is not likely that Tehachapi buckwheat would be particularly affected by a hotter and drier climate, but it's very small range indicates that other factors are limiting its expansion and how these factors may be affected by or interact with climate change is unknown.

Tejon Poppy (*Eschscholzia lemmonii* ssp. *kernensis*)

Tejon poppy has two characteristics of species likely to be sensitive to climate change:

- A narrow geographic range
- Habitat factors that are patchily distributed.

A lower risk characteristic of Tejon poppy is that its life history that may be more suited to a drier climate that some other species.

Compared to the other plant Covered Species (except Tehachapi buckwheat), Tejon poppy may be relatively less sensitive to climate change. However, potential negative impacts of climate change on Tejon poppy include:

- Exacerbation of habitat degradation such as by cattle grazing
- Increased competition with invasive grasses
- Extirpation of small local populations due to potential limited ability to make range shifts

Tejon poppy is endemic to central and western Kern County. The California Natural Diversity Database (CNDDB) includes 58 occurrences of this species (CDFG 2008). The Tejon poppy

grows on clay soils (Cypher 2006; CDFG 2008; Twisselmann 1967) and in sandy soils (CDFG 2008) between approximately 525 and 3,280 feet in elevation (CNPS 2008). Tejon poppy has always been rare due to its restricted range and affinity for clay soils (Cypher 2006). It is a CNPS List 1B.1 species and considered to be seriously endangered in California due to its rarity (CNPS 2008). However, none of the documented populations are known to have been extirpated, so the current population status of this species is assumed to be stable. Tejon poppy may be threatened by grazing and competition from non-native plants (CNPS 2008). Tejon poppy was not observed in the TMV Planning Area during rare plant surveys in 2007 (Dudek 2007b).

Most of the verified reports of Tejon poppy in the CNDDB from Elk Hills are from arid vegetation communities, including valley saltbush scrub, with common saltbush (*Atriplex polycarpa*), and non-native annual grasses such as red brome (*Bromus madritensis* ssp. *rubens*), wild oats (*Avena fatua*), and rat-tail fescue (*Vulpia myuros*) (CDFG 2008). These communities probably are not highly sensitive to projected climate change in California. However, climate change could result in overgrazing and trampling of occupied habitat. Increased fire frequency/and or intensity could increase competition between Tejon poppy and non-native species.

Tejon poppy is an annual and flowers from March to May (CNPS 2008). It is normally scarce, but it can grow in dense colonies in wet years. In certain areas, Tejon poppy is present in all but the driest years (Twisselmann 1967). Therefore, although it responds positively to high precipitation, it appears to be able to withstand relatively dry periods. Also, its association with valley saltbush scrub and annual grasslands suggests that it is fairly tolerant of varying precipitation levels.

While the primary mechanism of dispersal is explosive dehiscence (bursting or splitting) of the capsules, Clark and Jernstedt (1978) observed that seeds in many species of *Eschscholzia*, including *E. lemmonii*, appear to be adapted for runoff dispersal that can occur over greater distances. Various aspects of the seed morphology allow the seed to float and, therefore, allow for dispersal to occur via runoff. However, even this “greater distance” is relative to the primary mechanism of explosive dehiscence, and may still only occur in a local area (B. Preston, Pers. Comm. 2010). Nonetheless, lower amounts or frequencies of runoff could negatively affect dispersal by Tejon poppy.

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Appendix D

Habitat Suitability Criteria Methods

APPENDIX D
HABITAT SUITABILITY CRITERIA METHODS

1. SUITABLE HABITAT MODELING

This appendix describes the approach used to model suitable habitat for Covered Species in the TU MSHCP as well as the specific model input parameters used in the modeling. A wide array of literature was reviewed and used for the suitable habitat modeling process. Literature citations for the Covered Species discussed below are provided for each of the species in *Section 5* of the TU MSHCP.

1.1 COVERED SPECIES MODELED

Suitable habitat modeling was conducted for the 27 Covered Species occurring or potentially occurring on Covered Lands. *Table D-1* lists the Covered Species for which suitable habitat modeling was conducted and the Federal, state, and other status associated with these species.

Table D-1. Modeled Covered Species List

Biological Resource	Common Name	Scientific Name	Federal Status	State Status	CRPR List
Amphibian	Tehachapi slender salamander	*Batrachoseps stebbinsi*	BLM, FS	ST	None
Amphibian	Western spadefoot	*Spea [Scaphiopus] hammondii*	BLM	CSC	None
Amphibian	Yellow-blotched salamander	*Ensatina eschscholtzii croceater*	BLM	CSC	None
Bird	American peregrine falcon	*Falco peregrinus anatum*	BCC, FS	SE, FP, CDF	None
Bird	Bald eagle	*Haliaeetus leucocephalus*	None	SE, FP, CDF	None
Bird	Burrowing owl	*Athene cunicularia*	BCC, BLM	CSC	None
Bird	California Condor	*Gymnogyps californianus*	FE	SE, CDF, FP	None
Bird	Golden eagle	*Aquila chrysaetos*	BCC, BLM	CDF, FP, WL	None
Bird	Least Bell's vireo	*Vireo bellii pusillus*	FE, BCC	SE	None
Bird	Little willow flycatcher	*Empidonax traillii brewsteri*	None	SE	None
Bird	Purple martin	*Progne subis*	None	CSC	None
Bird	Southwestern willow flycatcher	*Empidonax traillii extimus*	FE	SE	None
Bird	Tricolored blackbird	*Agelaius tricolor*	BCC, BLM	CSC	None
Bird	Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	BCC, FC, FS	SE	None
Bird	White-tailed kite	*Elanus leucurus*	None	FP	None

Table D-1 (Continued)

Biological Resource	Common Name	Scientific Name	Federal Status	State Status	CRPR List
Bird	Yellow warbler	*Dendroica petechia brewsteri*	None	CSC	None
Insect	Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	None	None
Mammal	Ringtail	*Bassariscus astutus*	None	FP	None
Mammal	Tehachapi pocket mouse	*Perognathus alticolus inexpectatus*	None	CSC	None
Reptile	Coast horned lizard (*frontale* and *blainvillei* populations)	*Phrynosoma coronatum*	FS	CSC	None
Reptile	Two-striped garter snake	*Thamnophis hammondii*	BLM, FS	CSC	None
Plant	Fort Tejon woolly sunflower	*Eriophyllum lanatum* var. *hallii*	None	None	1B.1
Plant	Kusche's sandwort	*Arenaria macradenia* var. *kuschei*	None	None	1B.1
Plant	Round-leaved filaree	*California macrophylla [Erodium macrophyllum]*	None	None	1B.1
Plant	Striped adobe lily	*Fritillaria striata*	None	ST	1B.1
Plant	Tehachapi buckwheat	*Eriogonum callistum*	None	None	1B.1
Plant	Tejon poppy	*Eschscholzia lemmonii* ssp. *kernensis*	None	None	1B.1

[1]Federal Designations:

BCC	U.S. Fish and Wildlife Service Birds of Conservation Concern
BLM	Bureau of Land Management sensitive
FS	U.S. Forest Service sensitive

[2]State Designations:

CSC	California Special Concern species
FP	California Department of Fish and Game Fully Protected
WL	California Department of Fish and Game Watch List
CDF	California Department of Forestry & Fire Protection sensitive
SE	State listed as Endangered
ST	State listed as Threatened

[3]California Rare Plant Rank (CRPR) Designations:

1B	Rare or endangered in California and elsewhere
2	Rare, threatened, or endangered in California but more common elsewhere
Threat Extension .1	Seriously endangered and California (over 80% of occurrences threatened/high degree and immediacy of threat).
Threat Extension .2	Fairly endangered in California (20% to 80% occurrences threatened).
Threat Extension .3	Not very endangered in California

1.2 DATA

A comprehensive biological and physical database is available for Covered Lands and was used to generate the suitable habitat models for the Covered Species. This section describes the sources for, and limitations of, the various data layers used to develop the suitable habitat models for the plant and wildlife Covered Species listed in *Table D-1*.

1.2.1 COVERED SPECIES OCCURRENCE DATA

Covered Species occurrence data were reviewed and used to prepare various sections of the TU MSHCP that require an understanding of the general distribution and relative abundance of species covered in the TU MSHCP. Two primary sources of spatial (Geographic Information System (GIS)-based) data were used: (1) Covered Species occurrence data collected during various surveys in portions of the Covered Lands (Dudek 2007a; Dudek 2007b) and (2) California Natural Diversity Database (CNDDB) occurrence data (CDFG 2007c). Survey methods for Covered Species are included as *Appendix D1* to the TU MSHCP.

Plant and wildlife Covered Species occurrence data collected during various surveys in portions of the Covered Lands were either recorded on field maps to be digitized or recorded using a Global Positioning System (GPS) unit. The majority of the survey data was collected on the 28,253 acres of land referred to in the TU MSHCP as TMV Planning Area. The remaining 110,000 acres of Covered Lands have not been surveyed as extensively as the 28,253-acre TMV Planning Area. In either case, however, these location data are considered to be highly precise. Accuracy and validity of the identifications are considered to be high.

CNDDB occurrence data assign a location precision rating to each element datum or occurrence. There are 10 accuracy classes related to the precision of the mapping. Accuracy classes 1 and 2 are the most specific and "confidence-rich" of the features. Accuracy class 3, the non-specific bounded area, is less precise and depicts an area where the element is found "somewhere within the boundaries." These data were reviewed during preparation of the TU MSHCP in the context of their mapping precision and are considered somewhat limited when imprecise occurrence data are provided. However, the data are continually updated and will be available to the Project Biologist during implementation of the TU MSHCP.

Two non-spatial (non-GIS-based) resources related to species occurrences were also used to determine general distribution patterns, including geographic and elevation ranges, of the species covered in the TU MSHCP:

- California Native Plant Society (CNPS) online inventory (CNPS 2007) was used to assist biologists in determining general distribution patterns of the plant species covered in the TU

MSCHP. This database contains detailed information on plant species, and was used in determining suitable habitat parameters; and

- CDFG's *Life History Accounts and Range Maps—California Wildlife Habitat Relationships System* (CDFG 2007d), an online inventory of species life history accounts for California's wildlife, was consulted. For white-tailed kite, GIS data for the geographic range of the species was also used.

Additional scientific literature specific to each of the five groups of wildlife taxa were also reviewed. These resources include both online and print resources for different taxa, including:

Fish

- Range maps and descriptions provided in *Fish Species of Special Concern in California* (Moyle et al. 1995).

Reptiles/Amphibians

- *An Illustrated Exploration of the Herpetofauna of California*, including reptile and amphibian range maps (CaliforniaHerps 2007e);
- *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994);
- *Amphibian Declines: The Conservation Status of United States Species* (Lannoo 2005); and
- *Field Guide to Western Reptiles and Amphibians* (Stebbins 2003).

Birds

- Range maps and descriptions provided in *California's Wildlife*, Volume 2 (Zeiner et al. 1990b) and updated as available (CDFG 2007d);
- Descriptions of range and occurrences in *Birds of Southern California* (Garrett and Dunn 1981); and
- *Birds of North America* online references (Poole 2005).

Mammals

- *A Field Guide to the Mammals: North America, North of Mexico* (Burt and Grossenheider 1976);
- *Wild Mammals of North America: Biology, Management and Economics* (Chapman and Feldhamer 1982);

- *Mammals of the Pacific States: California, Oregon, and Washington* (Ingles 1965);
- *California Mammals* (Jameson and Peeters 1988); and
- *California's Wildlife*, Volume 3 (Zeiner et al. 1990c).

Additional occurrence data or range maps were reviewed for individual species and the citations are included in the species accounts in *Sections 4* and 5 of the TU MSHCP.

1.2.2 VEGETATION COMMUNITIES

The Covered Lands vegetation map is included as *Figure 5-1* of the TU MSHCP. This map was prepared by GIS staff at Tejon Ranchcorp (TRC). and its consulting biologists. Two primary data sources were combined to form this map: (1) the Tejon Ranch–wide vegetation composite map; and (2) the vegetation map created for the Tehachapi Mountain Uplands during site-specific studies in 2007.

The Tejon Ranch-Wide Vegetation Composite

The Tejon Ranch-wide vegetation composite data layer was based on several surveys conducted on the ranch between 1980 and 1994, and subsequently updated in fall 2007 to reflect changes in the extent of mining activity in the south-central portion of the Covered Lands. Additional vegetation mapping was conducted using a 1-meter-pixel-size aerial image flown in May 2000 to fill in gaps in vegetation mapping data. The Tejon Ranch-wide vegetation composite primarily reflects the classification system outlined in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, some vegetation communities mapped reflect more general mapping comparable to general habitat types (e.g., riparian forest and woodland) outlined in the *List of California Terrestrial Natural Communities* (CDFG 2003).

The Tejon Ranch-wide vegetation composite is limited by the timeframe within which the data were assembled, as well as the precision of the data. The Tejon Ranch-wide vegetation composite represents conditions at the time the data were assembled, in this case 1980 to 1994, 2000, and 2007.

Vegetation Mapping Conducted in 2007

The vegetation mapping conducted in 2007 in the Tehachapi Mountain Uplands used a 2006 1-foot-pixel-size orthorectified aerial image (AirPhotoUSA 2006). Vegetation mapping followed the classification scheme outlined in the *List of California Terrestrial Natural Communities* (CDFG 2003). Minimum mapping units were established at 2.2 acres (1 hectare) for communities not

considered to be high priority for inventory in the *List of California Terrestrial Natural Communities* and 1 acre for communities that were considered high priority for inventory.

The vegetation mapping conducted in 2007 is spatially limited because it does not cover the entire extent of the Covered Lands (i.e., it only covers the Tehachapi Mountain Uplands), but TRC considers it to be more than adequate for analyzing landscape-level effects and impacts to species within the portion of the Covered Lands that is covered.

Vegetation Crosswalk

To prepare a comprehensive vegetation layer for the Covered Lands, a "crosswalk" was created between the vegetation communities used in the Tejon Ranch-wide vegetation composite and the 2007 vegetation mapping in the Tehachapi Mountain Uplands. The crosswalk was necessary because the two vegetation data layers used different classification systems and the habitat suitability analysis required a vegetation data layer consisting of a uniform classification system. The crosswalk was applied to the 2007 vegetation layer for the Tehachapi Mountain Uplands so that the vegetation classification in this area was consistent with the classification system used for the Tejon Ranch-wide vegetation composite.

Table D-2 shows the crosswalk from the Tehachapi Mountain Uplands vegetation to the Tejon Ranch–wide vegetation composite and MSHCP vegetation datasets.

Table D-2. Vegetation Crosswalk between Tehachapi Mountain Uplands and MSHCP

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
Non-Native Vegetation, Developed Areas or Unvegetated Habitat	Non-Native Vegetation	Ornamental	Ornamental	Non Vegetative	Developed
	Urban/ Developed	Developed/ Disturbed Habitat	Developed/ Disturbed Habitat	Non Vegetative	Developed
	Unvegetated Habitat	Unvegetated Areas	Unvegetated Areas	Wash	Wash
	General Agriculture	Orchard and Vineyards	Orchard and Vineyards	Agriculture	Agriculture
	Native Tree Planting	Oak Tree Planting	Oak Tree Planting	Non Vegetative	Developed

Table D-2 (Continued)

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
Scrub and Chaparral	Coastal scrub	Coastal Scrub	Coastal Scrub	Scrub	Scrub
		California Buckwheat Scrub	California Buckwheat	Scrub	Saltbush/Buckwheat Scrub
		California Buckwheat Scrub	California Buckwheat Alluvial Fan	Scrub	Alluvial Scrub
		Scalebroom Scrub	Scalebroom Scrub	Scrub	Alluvial Scrub
	NA[1]	NA	NA	Scrub	Mojavean scrub
	Great Basin Scrub	Big Sagebrush Scrub	Big Sagebrush	Scrub	Scrub
		Rubber Rabbitbrush Scrub	Rubber Rabbitbrush Scrub	Scrub	Scrub
	Chaparral with Chamise with or without other codominant shrubs	Chamise Chaparral	Chamise – Scrub Oak Chaparral[1]	Chaparral	Chaparral
		Chamise – Bigberry Manzanita Chaparral	Chamise – Bigberry Manzanita	Chaparral	Chaparral
		Chamise – Bigberry Manzanita Chaparral	Chamise – Bigberry Manzanita – Cupleaf Ceanothus	Chaparral	Chaparral
		Chamise – Bigberry Manzanita Chaparral	Chamise – Bigberry Manzanita – Wedgeleaf Ceanothus	Chaparral	Chaparral
		Chamise – Wedgeleaf Ceanothus Chaparral	Chamise – Wedgeleaf Ceanothus	Chaparral	Chaparral
	Chaparral with Ceanothus ssp. as principal indicator	Wedgeleaf Ceanothus Chaparral	Wedgeleaf Ceanothus	Chaparral	Chaparral
	Chaparral with Manzanita as principal indicator	Chaparral with Manzanita as principal indicator	Chaparral with Manzanita as principal indicator	Chaparral	Chaparral
		Bigberry Manzanita Chaparral	Bigberry Manzanita	Chaparral	Chaparral
	Chaparral with Oak as principal indicator	Interior Live Oak – Canyon Live Oak Chaparral	Interior Live Oak – Canyon Live Oak	Chaparral	Chaparral

Table D-2 (Continued)

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
		Interior Live Oak – Scrub Oak Chaparral	Interior Live Oak – Scrub Oak Chaparral	Chaparral	Chaparral
		Mixed Scrub Oak Chaparral	Scrub Oak – Bigberry Manzanita	Chaparral	Scrub Oak
		Mixed Scrub Oak Chaparral	Scrub Oak – Wedgeleaf Ceanothus	Chaparral	Scrub Oak
		Scrub Oak Chaparral	Scrub Oak/ California Buckeye	Chaparral	Scrub Oak
		Scrub Oak Chaparral	Scrub Oak	Chaparral	Scrub Oak
		Scrub Oak – Birchleaf Mountain-mahogany Chaparral	Scrub Oak – Birchleaf Mountain-Mahogany	Chaparral	Scrub Oak
		Brewer Oak Chaparral	Brewer Oak Chaparral	Chaparral	Brewer's Oak Scrub
		Canyon Live Oak Chaparral	Canyon Live Oak Shrub	Chaparral	Chaparral
		Canyon Live Oak Chaparral	Canyon Live Oak – Holly-Leaf Redberry	Chaparral	Chaparral
		Tucker Oak Scrub	Tucker Oak Scrub	Chaparral	Chaparral
		Interior Live Oak Chaparral	Interior Live Oak Chaparral	Chaparral	Chaparral
	Chaparral with Birchleaf Mountain-mahogany as principal indicator	Birchleaf Mountain-mahogany – California Buckwheat	Birchleaf Mountain-Mahogany – California Buckwheat	Chaparral	Chaparral
		Birchleaf Mountain-mahogany Woodland	Birchleaf Mountain-Mahogany	Chaparral	Chaparral
Grass and Herb – Dominated Communities	Native Grassland	Creeping Ryegrass Grassland	Creeping Ryegrass Grassland	Grassland	Native Grassland
		Purple Needlegrass	Purple Needlegrass	Grassland	Native Grassland
		One-sided Bluegrass	One-Sided Bluegrass	Grassland	Native Grassland
		Giant Wild Rye Grassland	Giant Wild Rye	Grassland	Native Grassland
		Big Squirreltail	Big Squirreltail	Grassland	Native Grassland

Table D-2 (Continued)

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
		Grassland			
	Non – native Grassland	Non – native Grassland	Non-Native Grassland[1]	Grassland	Disturbed/Non-Native Grassland
	NA	NA	NA	Grassland	Grassland
	Meadows and Seeps not dominated by grasses	Rush Riparian Grassland	Rush Riparian Grassland	Wetland	Wetland
		Freshwater Seep	Freshwater Seep	Wetland	Wetland
Bog and Marsh	Marsh	Bulrush – Cattail Wetland	Bulrush – Cattail	Wetland	Wetland
		Cattail Wetland	Broad-Leafed Cattail	Wetland	Wetland
		Common Three-square	Common Three-Square	Wetland	Wetland
		California Bulrush Wetland	California Bulrush Wetland	Wetland	Wetland
		Tule	Tule	Wetland	Wetland
		Perennial Pepperweed	Perennial Pepperweed	Wetland	Wetland
Riparian and Bottomland Habitat	Riparian Forest and Woodland	Fremont Cottonwood Riparian Forests and Woodlands	Southern Cottonwood – Willow Riparian	Riparian Woodland	Riparian Woodland
		Red Willow Riparian Forests	Red Willow	Riparian Scrub	Riparian Scrub
		Red Willow Riparian Forests	Red Willow/ Arroyo Willow	Riparian Scrub	Riparian Scrub
		Mixed Willow Riparian Forests and Woodlands	Mixed Willow Riparian Forests and Woodlands	Riparian Woodland	Riparian Woodland
		Black Willow Riparian Forests and Woodlands	Black Willow Riparian Forests and Woodlands	Riparian Woodland	Riparian Woodland
		Central California Sycamore Alluvial Woodland	Central California Sycamore Alluvial Woodland	Riparian Woodland	Riparian Woodland

Table D-2 (Continued)

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
Broad Leafed Upland Tree Dominated	Oak Woodlands and Forests	Black Oak Forests and Woodland	Black Oak – Valley Oak	Woodland	Mixed Oak Woodland
		Black Oak Forests and Woodland	Canyon Live Oak – Black Oak	Woodland	Mixed Oak Woodland
		NA	NA	Savannah	Black Oak Savannah
		Black Oak Forests and Woodland	Black Oak Woodland	Woodland	Black Oak Woodland
		Black Oak Forests and Woodland	Black Oak Forest	Woodland	Black Oak Woodland
		Blue Oak Woodland[2]	Blue Oak Grass	Savannah	Blue Oak Savannah
		Blue Oak Woodland[2]	Blue Oak Grass	Woodland	Blue Oak Woodland
		Blue Oak Woodland[2]	Blue Oak Grass	Woodland	Mixed Oak Woodland
		Blue Oak Woodland	Blue Oak/ Interior Live Oak	Woodland	Blue Oak Woodland
		Blue Oak Woodland	Blue Oak/ Interior Live Oak – Wedgeleaf Ceanothus	Woodland	Blue Oak Woodland
		Blue Oak Woodland	Blue Oak/ Tucker Oak	Woodland	Blue Oak Woodland
		Blue Oak Woodland	Blue Oak/ Wedgeleaf Ceanothus	Woodland	Blue Oak Woodland
		Valley Oak Forests and Woodlands	Blue Oak – Valley Oak/ Grass	Savannah	Oak Savannah
		Valley Oak Forests and Woodlands	Blue Oak – Valley Oak/ Grass	Woodland	Oak Woodland
		Valley Oak Forests and Woodlands	Valley Oak/ Grass[1]	Savannah	Oak Savannah
		Valley Oak Forests and Woodlands	Great Valley Valley Oak Riparian	Riparian Woodland	Oak Riparian
		NA	NA	Savannah	Canyon Oak Savannah
		Canyon Live Oak Forest and Woodland	Canyon Live Oak Woodland	Woodland	Canyon Oak Woodland
		Canyon Live Oak Forest and Woodland	Canyon Live Oak Forest	Woodland	Canyon Oak Woodland
		NA	NA	Savannah	Gray Pine Savannah
		NA	NA	Woodland	Gray Pine Woodland
		NA	NA	Savannah	Interior Oak Savannah
		Interior Live Oak Woodland	Interior Live Oak Woodland	Woodland	Interior Oak Woodland

Table D-2 (Continued)

Tehachapi Mountain Uplands Vegetation				MSHCP Vegetation	
General Physiognomic Type	***General Habitat***	***Alliance***	***Vegetation Community***	***Generalized Vegetation***	***Specific Vegetation***
		Interior Live Oak Woodland	Interior Live Oak Forest	Woodland	Interior Oak Woodland
		NA	NA	Savannah	Mixed Oak Savannah
		Mixed Oak Woodland and Forest	Mixed Oak – California Buckeye	Woodland	Mixed Oak Woodland
		Mixed Oak Woodland and Forest	Mixed Oak/ Grass	Woodland	Mixed Oak Woodland
		NA	NA	Savannah	Undetermined Savannah
		NA	NA	Woodland	Undetermined Woodland
		NA	NA	Savannah	White Oak Savannah
		NA	NA	Woodland	White Oak Woodland
	California Buckeye Woodland	California Buckeye Woodland	California Buckeye Woodland	Woodland	California Buckeye Woodland
Coniferous Upland Forest and Woodland	Pine Forests and Woodlands	Singleleaf Pinyon Woodland	Singleleaf Pinyon Woodland	Woodland	Pinyon Pine Woodland
		Coulter Pine – Canyon Live Oak Woodland	Coulter Pine – Canyon Live Oak Woodland	Conifer	Conifer/Mixed Oak
	Juniper Woodlands	California Juniper Woodland and Scrub	Juniper Oak Cismontane Woodland	Conifer	Conifer/Mixed Oak
		California Juniper Woodland and Scrub	Cismontane Juniper Woodland and Scrub	Conifer	Conifer/Mixed Oak
		NA	NA	Conifer	Incense Cedar Stand
		NA	NA	Conifer	Intermixed Conifer
		NA	NA	Conifer	White Fir Stand
		NA	NA	Conifer	White Fir/Mixed Oak

Legend

[1] NA – Not Applicable because this vegetation community was not mapped in the Tehachapi Mountain uplands.

[2] The detailed vegetation mapping in the Tehachapi Mountain Uplands may include additional constituent species and cover estimate information to allow mapping to the association or sub-association levels for some communities that are not reflected in the more general categories in the table. For this reason, the Blue Oak Grass vegetation community, for example, is crosswalked to three different specific MSHCP vegetation communities.

1.2.3 CANOPY COVER

The habitat suitability models employ a canopy cover GIS layer resulting from a 1980 timber study that was conducted for the Tejon Ranch Forest Management Program and updated for conifer areas in 2001 (TRC 2001). This polygon layer was used in suitable habitat modeling for species that require open or conversely, dense habitats. The data are grouped into five categories: 0–10% canopy cover; 10%–40% canopy cover; 40%–70% canopy cover; 70%–100% canopy cover; and grass, not-a-part, and chaparral.

This data set covers approximately 80% of the Covered Lands. Portions of Covered Lands lacking canopy cover data are not included in suitable habitat acreages for the three species that include canopy cover as a component of the model: Tehachapi slender salamander, yellow-blotched salamander, and California condor. Because canopy cover data are available for the majority of Covered Lands, these species models are considered adequate for determining anticipated effects on Covered Species.

1.2.4 WATER FEATURES AND DRAINAGES

Tejon Ranch GIS staff digitized 1:24000 U.S. Geological Survey (USGS) blue line streams from USGS topographic maps (TRC 2002b). Using data from previous consultants' wetland studies and USGS quadrangle maps, TRC GIS staff further refined this data set to include "major streams" (TRC 2002a), which primarily correspond with perennial streams. Based upon wildlife surveys conducted in 2007 in the Tehachapi Mountain Uplands (Dudek 2007b), a composite perennial streams data set was created using the major streams (TRC 2002a) as a base but refined to include additional 1:24000 USGS blue line streams (TRC 2002b) that Dudek determined were perennial streams (Dudek 2007b). This data set, which generally delineates the location of perennial streams for purposes of modeling suitable habitat, is referred to in *Section 1.3* of this appendix as "perennial streams." In addition, Castac Lake, which is currently a perennial source of water, was mapped based upon the wetland delineation conducted on the Tehachapi Mountain Uplands (Impact Sciences 2008). In *Section 1.3*, this data set is referred to as "Castac Lake." The 1:24000 USGS blue line streams digitized from USGS topographic maps (TRC 2002b) is referred to in *Section 1.3* as "1:24000 USGS blue line streams."

TRC GIS staff created a seeps and springs GIS layer, which was developed by merging two data sets: (1) a detailed seeps and springs data layer created for the ranch (Advanced Geomatics 2004) and (2) the National Hydrography Dataset (USGS 2003) that provides information on surface water features, including springs and wells. The National Hydrography Dataset is based on 1:100,000-scale data and was used for portions of Covered Lands that are located outside of the ranch. In *Section 1.3* of this appendix, these data are referred to as "seeps and springs."

The California watershed map GIS data layer representing the standardized watershed boundaries for the State of California (Teale Data Center 2004) is also used to model suitable habitat for Covered Species. Only one watershed is used to model suitable habitat for Covered Species, the Antelope-Fremont Valley watershed. In *Section 1.3* of this appendix, these data are referred to as the "Antelope-Fremont Valley watershed."

None of the water features and drainages GIS data are considered to be limited for the purposes of landscape-scale analysis.

1.2.5 TERRAIN

An important component of the physical database for the TU MSHCP is the digital terrain model developed by Intermap Technologies (Intermap Technologies 2005). The digital terrain model allows GIS analysts to develop elevation, slope, and aspect models that are used as components of the suitable habitat modeling for certain species covered in the TU MSHCP. Slope data were used to create breeding habitat models for species that require steep cliffs, defined as 50° slopes and greater (or 119% slopes and greater). Slope data were also used as a predictor for California condor foraging habitat and habitat for Tehachapi pocket mouse (see *Section 1.3* of this appendix). Aspect was a component of suitable habitat models for species that occur on north-facing (0° to 90° and 0° to 270°) slopes. Moreover, the digital terrain model provides a qualitative understanding of the Covered Lands because it allows for an analysis of topography and hillshade features as well.

Elevation is a component of suitable habitat models for species with known elevation ranges that are not fully encompassed in the elevation ranges in the Covered Lands. For example, if a species' maximum known elevation range is 3,000 feet, the suitable habitat shown for the species only includes those areas in the Covered Lands below 3,000 feet that also meet the other model parameters (e.g., vegetation and slope). The elevation data used for the habitat suitability models are categorized into 100-foot increments, such as 1,900 feet to 2,000 feet and 2,000 feet to 2,100 feet. Known elevation ranges for species (*Section 1.3* of this appendix) were rounded to the upper 100-foot increment for the highest elevation range documented for the species and were rounded down to the lower 100-foot increment for the lowest elevation range documented for the species. This approach may result in an overestimate of suitable habitat.

TRC GIS staff created a GIS layer representing the location of ridgetops, which was used to model suitable habitat for California condor (TRC 2007c). In *Section 1.3* of this appendix, these areas are referred to as "ridgetops."

The digital terrain model is not considered to be limited for the purposes of landscape-scale conservation planning and analysis as described in the TU MSHCP. It is consistent in level of detail

with the other data sets used for the TU MSHCP such as generalized vegetation and soils data and accurately represents the general topographic features within Covered Lands. During implementation of the TU MSHCP, it is possible that more precise topography and digital terrain model data will be available for certain portions of the Covered Lands. More precise topographic data may facilitate evaluation of specific Covered Activities and management and monitoring issues as they arise.

1.2.6 SOILS

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (formerly the Soil Conservation Service) soils mapping for the southeastern part of Kern County was used to understand the soils in the Covered Lands (USDA 1981). Mapping and analysis of the soils data utilized the Soil Survey Geographic (SSURGO) database, which was created by digitizing the 1981 soil survey map and is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey (USDA 1999). Digital soils data enabled quantitative analysis of soils considered to be important for determining suitable habitat and the conservation of certain plant species. The digitized soils data layer is depicted in *Figure 5-2* of the TU MSHCP.

There are 66 different soil types mapped in the Covered Lands. Of those, the following soil types have a clay component (USDA 1981) and are included in the modeling for plants requiring clay substrate. In *Section 1.3* of this appendix, these soils are collectively referred to as "clay soils."

- Anaheim Variant Very Fine Sandy Loam, 2% to 30% Slopes
- Anaverde Gravelly Loam, 30% to 50% Slopes and 50% to 75% Slopes
- Anaverde Loam, 15% to 30% Slopes
- Anaverde Rocky Loam, 30% to 50% Slopes
- Arujo Sandy Loam, 9% to 15% Slopes
- Arujo–Friant–Tunis Complex, 15% to 50% Slopes and 50% to 75% Slopes
- Ayar Clay Loam, 5% to 15% Slopes
- Chanac–Badland Complex, 30% to 50% Slopes
- Chino Loam
- Cibo Cobbly Clay, 30% to 75% Slopes
- Gorman Sandy Loam, 15% to 30% Slopes, Eroded and 30% to 50% Slopes, Eroded

- Oakdale Sandy Loam, 2% to 9% Slopes
- Pleito Sandy Clay Loam, 9% to 50% Slopes
- Pleito–Chanac Sandy Clay Loams, 15% to 30% Slopes
- Ramona Coarse Sandy Loam, 5% to 9% Slopes and 9% to 15% Slopes
- Ramona Sandy Loam, 9% to 30% Slopes, Eroded
- Rescue Variant Loam, 15% to 30% Slopes and 30% to 50% Slopes
- Tehachapi Cobbly Sandy Clay Loam, Warm, 2% to 9% Slopes
- Tunis–Walong Complex, 50% to 75% Slopes
- Vista Coarse Sandy Loam, 15% to 30% Slopes, Eroded and 30% to 50% Slopes, Eroded
- Walong Sandy Loam, 15% to 30% Slopes and 30% to 50% Slopes
- Walong–Arujo Sandy Loams, 30% to 50% Slopes and 50% to 75% Slopes
- Walong–Edmundston Association, Very Steep
- Xererts–Xerolls Complex, Steep
- Xerorthents, Very Steep
- Xerorthents–Rock Outcrop Complex, Very Steep.

The following soil types are derived from material weathered mainly from granitic rock (USDA 1981) and are included in the modeling for plants requiring granitic substrate. In *Section 1.3* of this appendix, these soils are collectively referred to as "granitic soils."

- Amargosa Rocky Coarse Sandy Loam, 9% to 55% Slopes, Eroded
- Arujo Sandy Loam, 9% to 15% Slopes
- Arujo–Friant–Tunis Complex, 15% to 50% Slopes and 50% to 75% Slopes
- Arvin Sandy Loam, 5% to 9% Slopes
- Arvin Stony Sandy Loam, 5% to 9% Slopes

- Chino Loam
- Edmundston Gravelly Sandy Loam, 30% to 50% Slopes and 50% to 75% Slopes
- Edmundston–Godde–Tollhouse Complex, 50% to 75%
- Godde–tollhouse Gravelly Sandy Loams, 30% to 75% Slopes
- Gorman Sandy Loam, 15% to 30% Slopes, Eroded and 30% to 50% Slopes, Eroded
- Greenfield Sandy Loam, 2% to 9% Slopes and 9% to 15% Slopes, Eroded
- Hanford Coarse Sandy Loam, 2% to 9% Slopes
- Hanford Gravelly Sandy Loam, 2% to 9% Slopes
- Havala Sandy Loam, 5% to 9% Slopes and 9% to 15% Slopes
- Oak Glen Gravelly Sandy Loam, 2% to 9% Slopes
- Oak Glen Loam, 0% to 2% Slopes and 2% to 9% Slopes
- Oak Glen Sandy Loam, 2% to 9% Slopes
- Oakdale Sandy Loam, 2% to 9% Slopes
- Ramona Coarse Sandy Loam, 5% to 9% Slopes and 9% to 15% Slopes
- Ramona Sandy Loam, 9% to 30% Slopes, Eroded
- Sheridan Sandy Loam, 15% to 30% Slopes; 15% to 30% Slopes, Eroded; 30% to 50% Slopes; and 30% to 50% Slopes, Eroded
- Soboba Cobbly Loamy Sand, 2% to 5% Slopes
- Steuber Sandy Loam, 2% to 5% Slopes and 5% to 9% Slopes
- Steuber Stony Sandy Loam, 5% to 9% Slopes
- Tunis–Walong Complex, 50% to 75% Slopes
- Vista Coarse Sandy Loam, 15% to 30% Slopes, Eroded and 30% to 50% Slopes, Eroded
- Walong Sandy Loam, 15% to 30% Slopes and 30% to 50% Slopes

- Walong–Arujo Sandy Loams, 30% to 50% Slopes and 50% to 75% Slopes
- Walong–Edmundston Association, Very Steep
- Walong–Rock Outcrop Complex, 30% to 75% Slopes
- Xerorthents–Rock Outcrop Complex, Very Steep.

This data set covers approximately 90% of the Covered Lands. The soils mapping includes roughly the 90% of the Covered Lands. Models for Covered Species that include soils as a modeling parameter were analyzed as follows: (1) in the Covered Lands where soils data are present, suitable habitat was modeled using the parameters specified in *Section 1.3* of this appendix, including soils; (2) in the Covered Lands that lack soils data, suitable habitat was modeled using the parameters specified in *Section 1.3*, except soils. Acreages of suitable habitat depicted on suitable habitat maps in the TU MSHCP for soils-restricted plants include the sum of suitable habitat described above in (1) and (2), which represents an overestimate of suitable habitat acreages. The acreages of suitable habitat reported in the TU MSHCP for soils-restricted plants are described above in (1), which represents an underestimate of suitable habitat acreages.

1.2.7 IMAGERY

Two primary image data sources were used in developing the TU MSHCP: (1) geo-referenced USGS topographic quadrangle maps; and (2) full-color aerial images for a portion of the Covered Lands. Unlike aerial image data, geo-referenced USGS topographic quadrangle maps provide place names and other qualitative information useful in analyzing the conservation of the species covered in the TU MSHCP. The detail provided in these maps can be more useful for landscape-scale planning and mapping than aerial imagery.

For the Tehachapi Mountain Uplands area, full-color aerial photographs taken in June 2006 were obtained from AirPhotoUSA (2006) and used during various surveys conducted in this portion of the Covered Lands. Pixel size of this imagery is 1 foot and the aerial image is orthorectified, which provides greater accuracy in digitizing vector data (e.g., vegetation mapping and plant and wildlife occurrence data).

The imagery database is not considered to be limited for the purposes of landscape-scale conservation planning and analysis as described in the TU MSHCP. It is consistent in level of detail with the other data sets used for the TU MSHCP such as generalized vegetation and soils data. During implementation of the TU MSHCP, it is possible that more precise imagery data will be available for certain portions of the Covered Lands. More precise imagery data may facilitate evaluation of specific Covered Activities and management and monitoring issues as they arise.

1.2.8 HABITAT SUITABILITY ANALYSIS

The data described in this section were used to generate suitable habitat models for each of the species covered in the TU MSHCP. The data use and the model input parameters used for each Covered Species varied depending on the unique habitat requirements of each species. The database for generalist species without highly specialized habitat requirements or elevation limitation may include only vegetation, whereas specialist species with very precise habitat requirements may include some combination of vegetation, elevation, soil, slope, and/or the use of buffers around drainages, for example. Biologists familiar with these species reviewed the scientific literature (see *Sections 4* and *5* of the TU MSHCP for specific literature pertaining to each species) and determined the data type and model input parameters uniquely suited to each of the Covered Species. The biology working group peer-reviewed these initial model input parameters and revisions were made where improvements or adjustments were determined to be necessary. Once the data and input parameters were finalized, the habitat models were generated in ArcGIS using the digital data sources described above. The modeled suitable habitat acreages were then used for the conservation analysis for each Covered Species.

1.3 SPECIFIC MODEL PARAMETERS FOR COVERED SPECIES

This section provides a complete list of model input parameters used for the plant and wildlife suitable habitat modeling. The habitat functions of the modeled suitable habitat are also provided for wildlife species and are referred to as "habitat type." Habitat types are defined as follows:

- Suitable Habitat: The habitat provides for all the life history needs of the species, including shelter, breeding, and foraging. If secondary suitable habitat (see definition below) is also analyzed for a species, suitable habitat is modified by the term "primary." This modifier indicates that this species uses primary habitat more often and the habitat is adequate to support the species.

- Secondary Suitable Habitat: The habitat is less frequently used by the species. In the absence of primary suitable habitat, secondary suitable habitat alone may not be adequate to support the species.

- Primary Breeding Habitat: The habitat is used almost exclusively as breeding habitat; that is, supports breeding but not foraging.

- Wintering: The habitat provides for life history needs of the species during the winter non-breeding season. This category applies only to the bald eagle, which occurs infrequently during winter on Covered Lands, and is unlikely to breed on site even though suitable breeding habitat is present.

- Breeding and Foraging: The habitat provides for breeding and foraging, but does not provide all the life history needs of the species. Migratory birds that only breed and forage on site but winter elsewhere would be an example of a species that may occur in this habitat type but not for their entire life history. If secondary breeding and foraging habitat (see definition below) is also analyzed for a species, breeding and foraging is modified by the term primary. This modifier indicates that this species uses primary habitat more often and the habitat is adequate to support the species in terms of breeding and foraging.

- Secondary Breeding and Foraging: The habitat is less frequently used by the species. In the absence of primary breeding and foraging habitat, secondary breeding and foraging habitat alone may not be adequate to support the species.

- Foraging Habitat: Habitat used exclusively by the species for foraging and does not provide for other life history needs of the species; for example, shelter and breeding. For little willow flycatcher, the habitat type refers to foraging and stopover habitat. "Stopover habitat" refers to habitat used during migration stopovers.

- Secondary Foraging Habitat: Habitat used less frequently for foraging. In the absence of primary foraging habitat, secondary foraging habitat may not be adequate to support the species.

American peregrine falcon
Falco peregrinus anatum

Federal Status: BCC, FS
State Status: SE, FP, CDF

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Foraging
GRASSLAND	ANNUAL GRASSLAND	Foraging
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Foraging
GRASSLAND	GRASSLAND	Foraging
GRASSLAND	NATIVE GRASSLAND	Foraging
LAKE	LAKE	Foraging
RIPARIAN SCRUB	RIPARIAN SCRUB	Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Foraging
WASH	WASH	Foraging
WETLAND	WETLAND	Foraging

Elevation: All

Other Parameters: A separate model was created for breeding habitat, in addition to the foraging habitat shown above. Breeding habitat included all steep cliff areas, defined as 50 degrees slopes or greater (or 119% slopes or greater).

Bald eagle
Haliaeetus leucocephalus

Federal Status: None
State Status: SE, FP, CDF

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

LAKE	LAKE	Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Wintering
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Foraging
SAVANNA	BLACK OAK SAVANNA	Wintering
SAVANNA	BLUE OAK SAVANNA	Wintering
SAVANNA	CANYON OAK SAVANNA	Wintering
SAVANNA	INTERIOR OAK SAVANNA	Wintering
SAVANNA	MIXED OAK SAVANNA	Wintering
SAVANNA	OAK SAVANNA	Wintering
SAVANNA	UNDETERMINED SAVANNA	Wintering
SAVANNA	WHITE OAK SAVANNA	Wintering
WETLAND	WETLAND	Foraging
WOODLAND	BLACK OAK WOODLAND	Wintering
WOODLAND	BLUE OAK WOODLAND	Wintering
WOODLAND	CANYON OAK WOODLAND	Wintering
WOODLAND	INTERIOR OAK WOODLAND	Wintering
WOODLAND	MIXED OAK WOODLAND	Wintering
WOODLAND	OAK WOODLAND	Wintering
WOODLAND	UNDETERMINED WOODLAND	Wintering
WOODLAND	WHITE OAK WOODLAND	Wintering

Elevation: All

Other Parameters: Suitable habitat includes only those vegetation communities listed above that were within 1 mile of Castac Lake.

Burrowing owl
Athene cunicularia

Federal Status: BCC, BLM
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Secondary Breeding and Foraging
GRASSLAND	ANNUAL GRASSLAND	Primary Breeding and Foraging
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Primary Breeding and Foraging
GRASSLAND	GRASSLAND	Primary Breeding and Foraging
GRASSLAND	NATIVE GRASSLAND	Primary Breeding and Foraging
SCRUB	ALLUVIAL SCRUB	Secondary Breeding and Foraging
SCRUB	MOJAVEAN SCRUB	Secondary Breeding and Foraging
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Secondary Breeding and Foraging
SCRUB	SCRUB	Secondary Breeding and Foraging

Elevation: All

Other Parameters: None

California condor
Gymnogyps californianus

Federal Status: FE
State Status: SE, CDF

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Foraging Habitat
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Foraging Habitat
GRASSLAND	GRASSLAND	Foraging Habitat
GRASSLAND	NATIVE GRASSLAND	Foraging Habitat
SAVANNA	BLACK OAK SAVANNA	Foraging Habitat
SAVANNA	BLUE OAK SAVANNA	Foraging Habitat
SAVANNA	CANYON OAK SAVANNA	Foraging Habitat
SAVANNA	GRAY PINE SAVANNA	Foraging Habitat
SAVANNA	INTERIOR OAK SAVANNA	Foraging Habitat
SAVANNA	MIXED OAK SAVANNA	Foraging Habitat
SAVANNA	OAK SAVANNA	Foraging Habitat
SAVANNA	UNDETERMINED SAVANNA	Foraging Habitat
SAVANNA	WHITE OAK SAVANNA	Foraging Habitat
SCRUB	ALLUVIAL SCRUB	Foraging Habitat
SCRUB	MOJAVEAN SCRUB	Foraging Habitat
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Foraging Habitat
SCRUB	SCRUB	Foraging Habitat

Elevation: All

Other Parameters: Included vegetation communities listed above and that meet the canopy cover parameters (described below) only where these communities occur on ridgetops (i.e., within 100 feet of the centerline of the mapped ridgetops within Covered Lands) or on slopes equal to or greater than 17 degrees (or equal to or greater than 30% slopes). In addition, only vegetation communities that also have 0–10% canopy cover or 10%–40% canopy cover or grass, not-a-part, and chaparral were included in the final model due to the need for condor to forage in open habitats.

Coast horned lizard (*frontale* and *blainvilii* populations)
Phrynosoma coronatum

Federal Status: FS
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CONIFER	CONIFER/MIXED OAK	Primary Breeding/Foraging Habitat
CONIFER	INCENSE CEDAR STAND	Primary Breeding/Foraging Habitat
CONIFER	INTERMIXED CONIFER	Primary Breeding/Foraging Habitat
CONIFER	WHITE FIR STAND	Primary Breeding/Foraging Habitat
CONIFER	WHITE FIR/MIXED OAK	Primary Breeding/Foraging Habitat
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Primary Breeding/Foraging Habitat
GRASSLAND	GRASSLAND	Primary Breeding/Foraging Habitat
GRASSLAND	NATIVE GRASSLAND	Primary Breeding/Foraging Habitat
RIPARIAN SCRUB	RIPARIAN SCRUB	Secondary Breeding/Foraging habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Secondary Breeding/Foraging habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Secondary Breeding/Foraging habitat
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Secondary Breeding/Foraging habitat
SCRUB	ALLUVIAL SCRUB	Primary Breeding/Foraging Habitat
SCRUB	MOJAVEAN SCRUB	Primary Breeding/Foraging Habitat
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Primary Breeding/Foraging Habitat
SCRUB	SCRUB	Primary Breeding/Foraging Habitat
WASH	DESERT WASH/RIPARIAN/SEEPS	Primary Breeding/Foraging Habitat
WASH	WASH	Primary Breeding/Foraging Habitat
WOODLAND	BLACK OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	BLUE OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	CANYON OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	GRAY PINE WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	INTERIOR OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	MIXED OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	OAK WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	PINYON PINE WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	UNDETERMINED WOODLAND	Primary Breeding/Foraging Habitat
WOODLAND	WHITE OAK WOODLAND	Primary Breeding/Foraging Habitat

Elevation: All

Other Parameters: 70% or less canopy cover for coast horned lizard suitable habitat, both primary and secondary.

Fort Tejon woolly sunflower
Eriophyllum lanatum var. *hallii*

Federal Status: None
State Status: None
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CHAPARRAL	BREWERS OAK SCRUB	Suitable Habitat
CHAPARRAL	CHAPARRAL	Suitable Habitat
CHAPARRAL	SCRUB OAK	Suitable Habitat
CHAPARRAL	UNDETERMINED CHAPARRAL	Suitable Habitat
CONIFER	CONIFER/MIXED OAK	Suitable Habitat
CONIFER	INCENSE CEDAR STAND	Suitable Habitat
CONIFER	INTERMIXED CONIFER	Suitable Habitat
CONIFER	WHITE FIR STAND	Suitable Habitat
CONIFER	WHITE FIR/MIXED OAK	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	GRAY PINE SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat
SCRUB	SCRUB	Suitable Habitat
WOODLAND	BLACK OAK WOODLAND	Suitable Habitat
WOODLAND	BLUE OAK WOODLAND	Suitable Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Suitable Habitat
WOODLAND	CANYON OAK WOODLAND	Suitable Habitat
WOODLAND	GRAY PINE WOODLAND	Suitable Habitat
WOODLAND	INTERIOR OAK WOODLAND	Suitable Habitat
WOODLAND	MIXED OAK WOODLAND	Suitable Habitat
WOODLAND	OAK WOODLAND	Suitable Habitat
WOODLAND	PINYON PINE WOODLAND	Suitable Habitat
WOODLAND	UNDETERMINED WOODLAND	Suitable Habitat
WOODLAND	WHITE OAK WOODLAND	Suitable Habitat

Elevation: 3,400–5,000 feet

Other Parameters: None

Golden eagle
Aquila chrysaetos

Federal Status: BCC, BLM
State Status: CDF, FP, WL

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Foraging
GRASSLAND	ANNUAL GRASSLAND	Foraging
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Foraging
GRASSLAND	GRASSLAND	Foraging
GRASSLAND	NATIVE GRASSLAND	Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Primary Breeding
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Foraging
SAVANNA	BLACK OAK SAVANNA	Breeding and Foraging
SAVANNA	BLUE OAK SAVANNA	Breeding and Foraging
SAVANNA	CANYON OAK SAVANNA	Breeding and Foraging
SAVANNA	INTERIOR OAK SAVANNA	Breeding and Foraging
SAVANNA	MIXED OAK SAVANNA	Breeding and Foraging
SAVANNA	OAK SAVANNA	Breeding and Foraging
SAVANNA	UNDETERMINED SAVANNA	Breeding and Foraging
SAVANNA	WHITE OAK SAVANNA	Breeding and Foraging
SCRUB	ALLUVIAL SCRUB	Foraging
SCRUB	MOJAVEAN SCRUB	Foraging
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Foraging
SCRUB	SCRUB	Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Foraging
WASH	WASH	Foraging
WOODLAND	BLACK OAK WOODLAND	Primary Breeding
WOODLAND	BLUE OAK WOODLAND	Primary Breeding
WOODLAND	CANYON OAK WOODLAND	Primary Breeding
WOODLAND	INTERIOR OAK WOODLAND	Primary Breeding
WOODLAND	MIXED OAK WOODLAND	Primary Breeding
WOODLAND	OAK WOODLAND	Primary Breeding
WOODLAND	UNDETERMINED WOODLAND	Primary Breeding
WOODLAND	WHITE OAK WOODLAND	Primary Breeding

Elevation: All

Other Parameters: None

Kusche's sandwort
Arenaria macradenia var. *kuschei*

Federal Status: None
State Status: None
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CHAPARRAL	BREWERS OAK SCRUB	Suitable Habitat
CHAPARRAL	CHAPARRAL	Suitable Habitat
CHAPARRAL	SCRUB OAK	Suitable Habitat
CHAPARRAL	UNDETERMINED CHAPARRAL	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat
WOODLAND	BLACK OAK WOODLAND	Suitable Habitat
WOODLAND	BLUE OAK WOODLAND	Suitable Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Suitable Habitat
WOODLAND	CANYON OAK WOODLAND	Suitable Habitat
WOODLAND	INTERIOR OAK WOODLAND	Suitable Habitat
WOODLAND	MIXED OAK WOODLAND	Suitable Habitat
WOODLAND	OAK WOODLAND	Suitable Habitat
WOODLAND	UNDETERMINED WOODLAND	Suitable Habitat
WOODLAND	WHITE OAK WOODLAND	Suitable Habitat

Elevation: 3,800–5,600 feet

Other Parameters: Granitic soils

Least Bell's vireo
Vireo bellii pusillus

Federal Status: FE, BCC
State Status: SE

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Breeding and Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Breeding and Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Breeding and Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Breeding and Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Breeding and Foraging

Elevation: 1,900–4,100 feet

Other Parameters: None

Little willow flycatcher
Empidonax traillii brewsteri

Federal Status: None
State Status: SE

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Foraging and Stopover
RIPARIAN WOODLAND	OAK RIPARIAN	Foraging and Stopover
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Foraging and Stopover
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Foraging and Stopover
WASH	DESERT WASH/RIPARIAN/SEEPS	Foraging and Stopover

Elevation: All

Other Parameters: None

Purple martin
Progne subis

Federal Status: None
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CONIFER	CONIFER/MIXED OAK	Breeding and Foraging
CONIFER	INCENSE CEDAR STAND	Breeding and Foraging
CONIFER	INTERMIXED CONIFER	Breeding and Foraging
CONIFER	WHITE FIR STAND	Breeding and Foraging
CONIFER	WHITE FIR/MIXED OAK	Breeding and Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Breeding and Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Breeding and Foraging
SAVANNA	BLACK OAK SAVANNA	Breeding and Foraging
SAVANNA	BLUE OAK SAVANNA	Breeding and Foraging
SAVANNA	CANYON OAK SAVANNA	Breeding and Foraging
SAVANNA	GRAY PINE SAVANNA	Breeding and Foraging
SAVANNA	INTERIOR OAK SAVANNA	Breeding and Foraging
SAVANNA	MIXED OAK SAVANNA	Breeding and Foraging
SAVANNA	OAK SAVANNA	Breeding and Foraging
SAVANNA	UNDETERMINED SAVANNA	Breeding and Foraging
SAVANNA	WHITE OAK SAVANNA	Breeding and Foraging
WOODLAND	BLACK OAK WOODLAND	Breeding and Foraging
WOODLAND	BLUE OAK WOODLAND	Breeding and Foraging
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Breeding and Foraging
WOODLAND	CANYON OAK WOODLAND	Breeding and Foraging
WOODLAND	GRAY PINE WOODLAND	Breeding and Foraging
WOODLAND	INTERIOR OAK WOODLAND	Breeding and Foraging
WOODLAND	MIXED OAK WOODLAND	Breeding and Foraging
WOODLAND	OAK WOODLAND	Breeding and Foraging
WOODLAND	PINYON PINE WOODLAND	Breeding and Foraging
WOODLAND	UNDETERMINED WOODLAND	Breeding and Foraging
WOODLAND	WHITE OAK WOODLAND	Breeding and Foraging

Elevation: All

Other Parameters: None

Ringtail
Bassariscus astutus

Federal Status: None
State Status: FP

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

LAKE	LAKE	Suitable Habitat
RIPARIAN SCRUB	RIPARIAN SCRUB	Suitable Habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Suitable Habitat
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Suitable Habitat
WASH	DESERT WASH/RIPARIAN/SEEPS	Suitable Habitat
WETLAND	WETLAND	Suitable Habitat

Elevation: All

Other Parameters: Includes the vegetation communities listed above, seeps and springs, and perennial steams. These areas were buffered by 1 kilometer (3,281 feet) and suitable habitat includes all areas within that 1 kilometer-buffered area.

Round-leaved filaree
California macrophylla [Erodium macrophyllum]

Federal Status: None
State Status: None
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CHAPARRAL	SCRUB OAK	Suitable Habitat
CONIFER	CONIFER/MIXED OAK	Suitable Habitat
CONIFER	INCENSE CEDAR STAND	Suitable Habitat
CONIFER	INTERMIXED CONIFER	Suitable Habitat
CONIFER	WHITE FIR STAND	Suitable Habitat
CONIFER	WHITE FIR/MIXED OAK	Suitable Habitat
GRASSLAND	ANNUAL GRASSLAND	Suitable Habitat
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Suitable Habitat
GRASSLAND	GRASSLAND	Suitable Habitat
GRASSLAND	NATIVE GRASSLAND	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	GRAY PINE SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat
SCRUB	SCRUB	Suitable Habitat
WOODLAND	BLACK OAK WOODLAND	Suitable Habitat
WOODLAND	BLUE OAK WOODLAND	Suitable Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Suitable Habitat
WOODLAND	CANYON OAK WOODLAND	Suitable Habitat
WOODLAND	GRAY PINE WOODLAND	Suitable Habitat
WOODLAND	INTERIOR OAK WOODLAND	Suitable Habitat
WOODLAND	MIXED OAK WOODLAND	Suitable Habitat
WOODLAND	OAK WOODLAND	Suitable Habitat
WOODLAND	PINYON PINE WOODLAND	Suitable Habitat
WOODLAND	UNDETERMINED WOODLAND	Suitable Habitat
WOODLAND	WHITE OAK WOODLAND	Suitable Habitat

Elevation: 1,900–4,600 feet

Other Parameters: Clay soils

Southwestern willow flycatcher
Empidonax traillii extimus

Federal Status: FE
State Status: SE

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Breeding and Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Breeding and Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Breeding and Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Breeding and Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Breeding and Foraging

Elevation: All

Other Parameters: None

Striped adobe-lily
Fritillaria striata

Federal Status: None
State Status: ST
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

GRASSLAND	ANNUAL GRASSLAND	Suitable Habitat
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Suitable Habitat
GRASSLAND	GRASSLAND	Suitable Habitat
GRASSLAND	NATIVE GRASSLAND	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat

Elevation: 1,900–4,800 feet

Other Parameters: Clay soils

Tehachapi buckwheat
Eriogonum callistum

Federal Status: None
State Status: None
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CHAPARRAL	BREWERS OAK SCRUB	Suitable Habitat
CHAPARRAL	CHAPARRAL	Suitable Habitat
CHAPARRAL	SCRUB OAK	Suitable Habitat
CHAPARRAL	UNDETERMINED CHAPARRAL	Suitable Habitat
WOODLAND	PINYON PINE WOODLAND	Suitable Habitat

Elevation: 4,400–5,500 feet

Other Parameters: Include vegetation communities listed above that were also within the following soil types, which are the soil types on which the species has been documented: Anaverde Gravelly Loam, 50% to 75% Slopes; or Xerorthents-Rock Outcrop Complex, Very Steep or Lebec Rocky Loam, 15% to 50% Percent Slopes.

Tehachapi pocket mouse
Perognathus alticolus inexpectatus

Federal Status: None
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CONIFER	CONIFER/MIXED OAK	Suitable Habitat
CONIFER	INCENSE CEDAR STAND	Suitable Habitat
CONIFER	INTERMIXED CONIFER	Suitable Habitat
CONIFER	WHITE FIR STAND	Suitable Habitat
CONIFER	WHITE FIR/MIXED OAK	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	GRAY PINE SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat
SCRUB	ALLUVIAL SCRUB	Suitable Habitat
SCRUB	MOJAVEAN SCRUB	Suitable Habitat
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Suitable Habitat
SCRUB	SCRUB	Suitable Habitat
WOODLAND	GRAY PINE WOODLAND	Suitable Habitat
WOODLAND	PINYON PINE WOODLAND	Suitable Habitat

Elevation: 3,500–6,000 feet
Other Parameters: Suitable habitat included vegetation communities that also meet both of the following criteria: (1) is located within the Antelope-Fremont Valley watershed and (2) is equal to or less than 9 degrees (or equal to or less than 15% slope).

Tehachapi slender salamander
Batrachoseps stebbinsi

Federal Status: BLM, FS
State Status: ST

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CHAPARRAL	CHAPARRAL	Suitable Habitat
CHAPARRAL	SCRUB OAK	Suitable Habitat
CONIFER	CONIFER/MIXED OAK	Suitable Habitat
CONIFER	INTERMIXED CONIFER	Suitable Habitat
CONIFER	WHITE FIR/MIXED OAK	Suitable Habitat
CONIFER	INCENSE CEDAR STAND	Suitable Habitat
SAVANNA	BLACK OAK SAVANNA	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNAH	Suitable Habitat
SCRUB	SCRUB	Suitable Habitat
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Suitable Habitat
SCRUB	ALLUVIAL SCRUB	Suitable Habitat
SCRUB	MOJAVEAN SCRUB	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Suitable Habitat
WOODLAND	BLACK OAK WOODLAND	Suitable Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Suitable Habitat
WOODLAND	CANYON OAK WOODLAND	Suitable Habitat
WOODLAND	MIXED OAK WOODLAND	Suitable Habitat
WOODLAND	OAK WOODLAND	Suitable Habitat
WOODLAND	UNDETERMINED WOODLAND	Suitable Habitat
WOODLAND	WHITE OAK WOODLAND	Suitable Habitat
WOODLAND	BLUE OAK WOODLAND	Suitable Habitat
WOODLAND	PINYON PINE WOODLAND	Suitable Habitat

Elevation: 1,900–5,000 feet

Other Parameters: Suitable habitat areas included the vegetation communities listed above (40% to 70% canopy cover; or 70% to 100% canopy cover) that are within 300 feet (150 feet each side) of 1:24000 USGS blue line streams and on north-facing slopes (0° to 90° and 0° to 270°).

Tejon poppy
Eschscholzia lemmonii ssp. *kernensis*

Federal Status: None
State Status: None
CRPR: 1B.1

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

GRASSLAND	ANNUAL GRASSLAND	Suitable Habitat
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Suitable Habitat
GRASSLAND	GRASSLAND	Suitable Habitat
GRASSLAND	NATIVE GRASSLAND	Suitable Habitat
SCRUB	ALLUVIAL SCRUB	Suitable Habitat
SCRUB	SALTBUSH/BUCKWHEAT SCRUB	Suitable Habitat
SCRUB	SCRUB	Suitable Habitat

Elevation: 1,900–3,300 feet

Other Parameters: None

Tricolored blackbird
Agelaius tricolor

Federal Status: BCC, BLM
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Foraging
GRASSLAND	ANNUAL GRASSLAND	Foraging
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Foraging
GRASSLAND	GRASSLAND	Foraging
GRASSLAND	NATIVE GRASSLAND	Foraging
RIPARIAN SCRUB	RIPARIAN SCRUB	Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Breeding
WASH	DESERT WASH/RIPARIAN/SEEPS	Foraging
WETLAND	WETLAND	Breeding

Elevation: 1,900–4,000 feet

Other Parameters: None

Two-striped garter snake
Thamnophis hammondii

Federal Status: BLM, FS
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Suitable Habitat
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Suitable Habitat
WASH	DESERT WASH/RIPARIAN/SEEPS	Suitable Habitat
WASH	WASH	Suitable Habitat
WETLAND	WETLAND	Suitable Habitat

Elevation: All

Other Parameters: Vegetation communities listed above, perennial streams (with a 200-foot buffer/100 feet per side), and seeps and springs (with a 200-foot buffer/100 feet per side) within the Western Transverse Range only.

Valley elderberry longhorn beetle
Desmocerus californicus dimorphus

Federal Status: FT
State Status: None

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CONIFER	INTERMIXED CONIFER	Suitable Habitat
SAVANNA	BLUE OAK SAVANNA	Suitable Habitat
SAVANNA	CANYON OAK SAVANNA	Suitable Habitat
SAVANNA	INTERIOR OAK SAVANNA	Suitable Habitat
SAVANNA	MIXED OAK SAVANNA	Suitable Habitat
SAVANNA	OAK SAVANNA	Suitable Habitat
SAVANNA	UNDETERMINED SAVANNA	Suitable Habitat
SAVANNA	WHITE OAK SAVANNA	Suitable Habitat
WOODLAND	BLACK OAK WOODLAND	Suitable Habitat
WOODLAND	BLUE OAK WOODLAND	Suitable Habitat
WOODLAND	CALIFORNIA BUCKEYE WOODLAND	Suitable Habitat
WOODLAND	CANYON OAK WOODLAND	Suitable Habitat
WOODLAND	INTERIOR OAK WOODLAND	Suitable Habitat
WOODLAND	MIXED OAK WOODLAND	Suitable Habitat
WOODLAND	OAK WOODLAND	Suitable Habitat
WOODLAND	WHITE OAK WOODLAND	Suitable Habitat

Elevation: 1,900–3,000 feet

Other Parameters: Vegetation included in model only if listed above and if the vegetation lies within 300 feet (150 feet on either side) of a 1:24000 USGS blue line stream.

Western spadefoot
Spea [Scaphiopus] hammondii

Federal Status: BLM
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Suitable Habitat
RIPARIAN WOODLAND	OAK RIPARIAN	Suitable Habitat
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Suitable Habitat
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Suitable Habitat
WASH	DESERT WASH/RIPARIAN/SEEPS	Suitable Habitat
WASH	WASH	Suitable Habitat
WETLAND	WETLAND	Suitable Habitat

Elevation: 1,900–4,500 feet

Other Parameters: Included all vegetation communities listed above and seeps and springs buffered by 5 feet on each side (10 feet total).

Western yellow-billed cuckoo
Coccyzus americanus occidentalis

Federal Status: BCC, FC, FS
State Status: SE

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

RIPARIAN SCRUB	RIPARIAN SCRUB	Breeding and Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Breeding and Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Breeding and Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Breeding and Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Breeding and Foraging

Elevation: All

Other Parameters: None

White-tailed kite
Elanus leucurus

Federal Status: None
State Status: FP

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

AGRICULTURE	AGRICULTURE	Foraging
GRASSLAND	ANNUAL GRASSLAND	Foraging
GRASSLAND	DISTURBED/NON-NATIVE GRASSLAND	Foraging
GRASSLAND	GRASSLAND	Foraging
GRASSLAND	NATIVE GRASSLAND	Foraging
WETLAND	WETLAND	Foraging

Elevation: Determined by the year-round range map for the species provided by California Wildlife Habitat Relationships System (CDFG 2007d), generally coastal and valley lowlands.

Other Parameters: Included all vegetation communities listed above within 1 kilometer (3,281 feet) on each side (2 kilometers (6,562 feet) total) of perennial streams and Castac Lake.

Yellow warbler
Dendroica petechia brewsteri

Federal Status: None
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

CONIFER	CONIFER/MIXED OAK	Secondary Foraging
CONIFER	INTERMIXED CONIFER	Secondary Foraging
CONIFER	WHITE FIR/MIXED OAK	Secondary Foraging
RIPARIAN SCRUB	RIPARIAN SCRUB	Breeding and Foraging
RIPARIAN WOODLAND	OAK RIPARIAN	Breeding and Foraging
RIPARIAN WOODLAND	RIPARIAN WOODLAND	Breeding and Foraging
RIPARIAN/WETLAND	RIPARIAN/WETLAND	Breeding and Foraging
WASH	DESERT WASH/RIPARIAN/SEEPS	Breeding and Foraging
WOODLAND	BLACK OAK WOODLAND	Secondary Foraging
WOODLAND	BLUE OAK WOODLAND	Secondary Foraging
WOODLAND	CANYON OAK WOODLAND	Secondary Foraging
WOODLAND	GRAY PINE WOODLAND	Secondary Foraging
WOODLAND	INTERIOR OAK WOODLAND	Secondary Foraging
WOODLAND	MIXED OAK WOODLAND	Secondary Foraging
WOODLAND	OAK WOODLAND	Secondary Foraging
WOODLAND	UNDETERMINED WOODLAND	Secondary Foraging
WOODLAND	WHITE OAK WOODLAND	Secondary Foraging

Elevation: All

Other Parameters: None

Yellow-blotched salamander
Ensatina eschscholtzi croceator

Federal Status: BLM
State Status: CSC

Standard Vegetation Input Parameters (including general and specific vegetation community) and Habitat Type

None selected for this species. See other parameters below.

Elevation: All

Other Parameters: Suitable habitat includes all vegetation communities on Covered Lands on north-facing slopes (0° to 90° and 0° to 270°) and with a canopy cover of 40% and greater (i.e., 40% to 70% canopy cover; or 70% to100% canopy cover).

Appendix E

Covered Species Survey Methods

COVERED SPECIES SURVEY METHODS

1.0 WILDLIFE RESOURCES

Dudek conducted surveys for special-status wildlife species in accordance with official protocol methods or other accepted methods where protocol survey methods were not available. Special-status wildlife species include all species listed under the Federal Endangered Species Act, the California Endangered Species Act (CESA), as well as (1) California Special Concern (CSC) species designated by the California Department of Fish and Game (CDFG); (2) mammals and birds that are Fully Protected (FP) species, as described in Fish and Game Code, Sections 4700 and 3511; and (3) Birds of Conservation Concern (BCC) designated by the U.S. Fish and Wildlife Service (USFWS). When appropriate, global positioning system (GPS) equipment was used to collect data using sub-meter accuracy Trimble GPS units, unless otherwise noted.

The wildlife surveys described herein were conducted within the 26,417 ac. Tejon Mountain Village (TMV) Specific Plan Area but they also included the nearby off-site Castac Lake and portions of Grapevine Creek to provide context for the surveys (e.g., surveys for species that may primarily use the lake but also occur on the TMV project). Suitable habitat modeling was conducted for the special-status species addressed in this document for the entire 138,000 ac. of Covered Lands. Because systematic wildlife surveys were not conducted in approximately 111,580 acres (81%) of the Covered Lands, the habitat modeling had to rely on available vegetation community, soil, elevation, canopy cover, and topographic information, as described in detail in Appendix D. Because the habitat models used general landscape-level data and do not include all microhabitat features that may be necessary for predicting species occurrences and occupied habitat, the habitat models are not intended to be used to quantify impacts and conservation of occupied habitat or species populations.

1.1 LITERATURE REVIEW

Prior to conducting fieldwork, pertinent literature on the wildlife of the region was reviewed to determine potential presence of species on the site, accepted protocol survey methodologies, and habitat preference and life history characteristics. This information was used to develop survey methodologies for those species that do not have a current standardized survey protocol. The literature included reports from prior wildlife surveys and literature on special-status wildlife species that could potentially occur within the TMV Planning Area. Information regarding wildlife in the region also was obtained through consultation with biologists at Jones & Stokes (J&S) that had previously surveyed portions of the site, other Dudek biologists with experience in the region, and staff at the Tejon Ranchcorp (TRC).

The following list summarizes the principal references reviewed to conduct special-status wildlife surveys on the site:

- The CDFG California Natural Diversity Database (CNDDB) *Special Animals List*, which was first reviewed in January 2007 and reviewed after publication of each subsequent edition through February 2008 (CDFG 2008a)
- The CDFG CNDDB *Rarefind*, first reviewed for the TMV Planning Area and all areas within 10 mi. of the TMV Planning Area in January 2007 and reviewed again following subsequent editions through March 2008 (CDFG 2008b)
- *An Illustrated Exploration of the Herpetofauna of California*, including reptile and amphibian range maps (CaliforniaHerps 2008)
- *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994)
- *Amphibian Declines: The Conservation Status of United States Species* (Lannoo 2005)
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003).
- Range maps and descriptions provided in *California's Wildlife, Volume 2: Birds* (Zeiner et al. 1990a) and as updated by CDFG (2006a)
- Descriptions of range and occurrences within *Birds of Southern California: Status and Distribution* (Garrett and Dunn 1981)
- *The Birds of North America Online* references published by the Cornell Laboratory of Ornithology and the American Ornithologists' Union (Poole 2005)
- *A Field Guide to the Mammals: North America, North of Mexico* (Burt and Grossenheider 1976)
- *Wild Mammals of North America: Biology, Management, and Economics* (Chapman and Feldhamer 1982)
- *Mammals of the Pacific States: California, Oregon, and Washington* (Ingles 1965)
- *California Mammals* (Jameson and Peeters 1988)
- *California's Wildlife, Volume 3: Mammals* (Zeiner et al. 1990b)
- Maps and descriptions provided by *Butterflies and Moths of North America* online database (Opler et al. 2006)

- Range maps and descriptions provided in *Fish Species of Special Concern in California* (Moyle et al. 1995)
- *Jurisdictional Delineation Report for the Tejon Mountain Village Study Area* (Impact Sciences 2008)
- *Sensitive Butterfly Survey on Phase 1 Portion of Tejon Mountain Village Specific Plan, Kern County, California* (Bruyea Biological Consulting 2003)
- *Special-Status Amphibian, Reptile, and Bird Biological Evaluation for TMV* (Impact Sciences 2004)
- *Tejon Mountain Village Phase I Small Mammal Trapping Study* (Compliance Biology 2003)
- Unpublished draft *Tejon Mountain Village Biological Resources Technical Report* (J&S 2006).

1.2 NOMENCLATURE AND GENERAL SURVEY TECHNIQUES

Wildlife species detected during all field surveys by sight, calls, tracks, scat, or other sign were recorded. A list of all wildlife species observed within the TMV Specific Plan Area is included in Appendix B to Appendix I to Appendix E-1 to the Tejon Mountain Village EIR (Kern County 2009). Latin and common names of animals follow the *Complete List of Amphibian, Reptile, Bird, and Mammal Species in California* (CDFG 2006b) for reptiles, amphibians, birds, and mammals. For bird species, the 48th Supplement to the American Ornithologists' Union Check-list (Banks et al. 2007) was used to update the nomenclature used in CDFG (2006b). For insects, Emmel and Emmel (1973), Emmel (1998), Howe (1975), Scott (1986), and Hogue (1974) were used to update CDFG (2006b). Nelson et al. (2004) was used to update nomenclature for fish. Stebbins (2003) was used to update nomenclature for reptiles and amphibians. The CDFG Special Animals List (CDFG 2008a) was used for both the Latin and common names applied to special-status species, and to resolve nomenclature differences between the *Complete List of Amphibian, Reptile, Bird, and Mammal Species in California* (CDFG 2006b) and any of the updates listed above. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used to aid in the identification of observed wildlife.

1.3 SPECIAL-STATUS INVERTEBRATE SPECIES

Dudek conducted USFWS protocol-level focused surveys for the Federally listed threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) in the TMV Planning Area.

Valley Elderberry Longhorn Beetle

Surveys for valley elderberry longhorn beetle were conducted in accordance with the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999). All areas at elevations less than 3,500 ft amsl (an elevation level approximately 500 ft higher than recorded for the species) within the TMV project's development envelope and within a 100 ft buffer of the development envelope were surveyed in accordance with the USFWS guidelines (USFWS 1999).

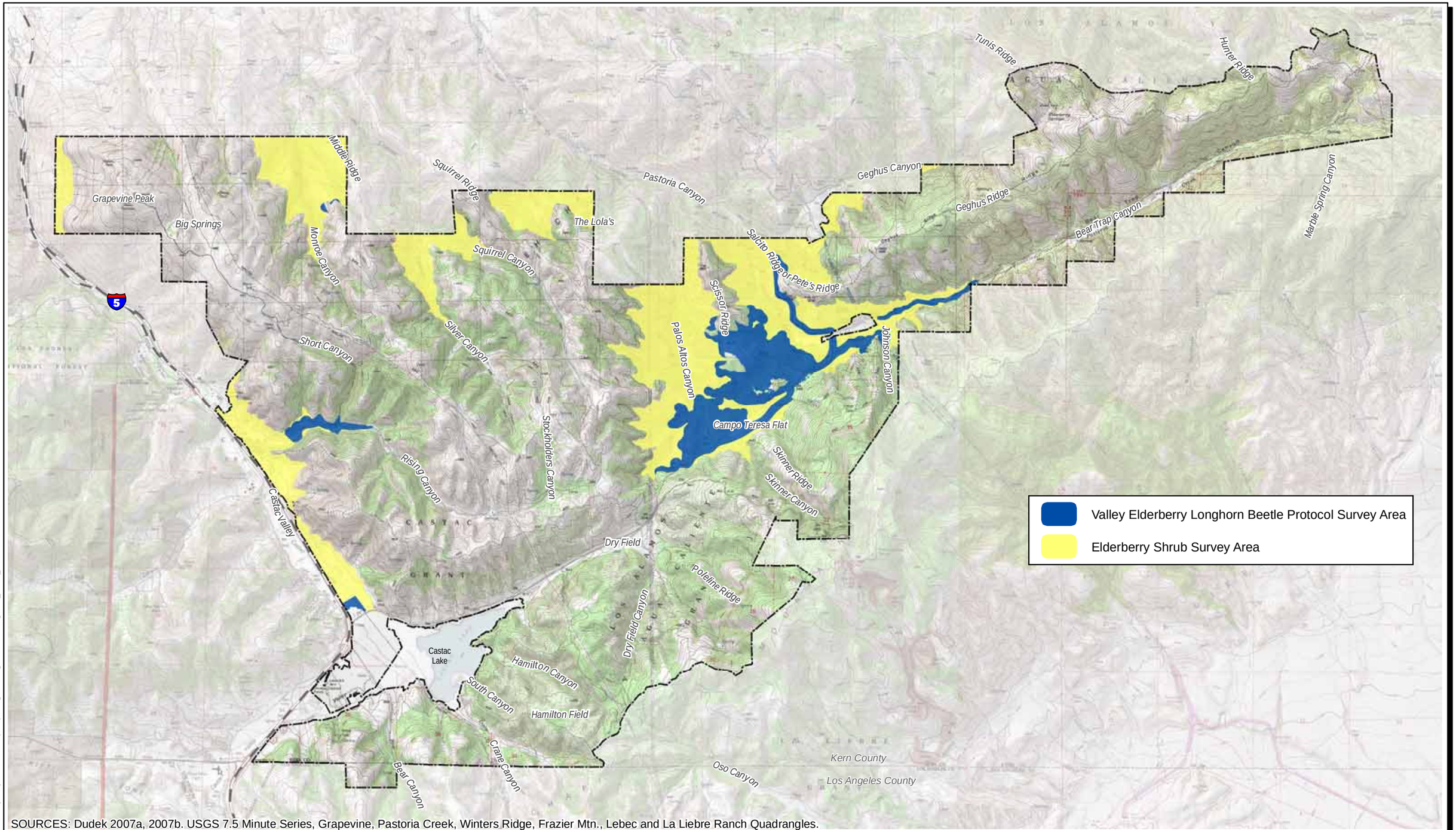
All elderberry plants within the general survey area were mapped using a GPS receiver. The elderberry shrub surveys were conducted by Dudek urban foresters and/or arborists Gerhard Bombe, Doug Duncanson, and Patrick Craig April 23 through 27, April 30, and May 1 through 3, 2007. The results of the general elderberry shrub survey are shown in yellow and blue on Figure D.1-1 of this appendix.

Dudek biologists Anita M. Hayworth and Brianna Wood conducted focused surveys for valley elderberry longhorn beetle within the focused survey areas, shown in blue only on Figure D.1-1 of this appendix, between April 30 and May 1, 2007 (see Table D.1-1). All elderberry shrubs within the survey area having one or more stems measuring 1 in. or greater in diameter at ground level were thoroughly searched for beetle exit holes, and the diameter size class of the elderberry was recorded.

Table D.1-1. Special-Status Valley Elderberry Longhorn Beetle Survey Schedule and Conditions

Survey Area	Personnel	Date
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/23/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/24/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/25/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/26/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/27/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/30/07
Focused Survey Area	AMH, BMW	04/30/07[1]
Elderberry Shrub Survey Area	GDB, DJD, PDC	05/01/07
Focused Survey Area	AMH, BMW	05/01/07[2]
Elderberry Shrub Survey Area	GDB, DJD, PDC	05/02/07
Elderberry Shrub Survey Area	GDB, DJD, PDB	05/03/07

Personnel key:
GDB: Gerhard Bombe; DJD: Doug Duncanson; PDC: Patrick Craig; AMH: Anita Hayworth; BMW: Brianna Wood.
[1]On 04/30/07, survey was conducted from 0911–1900; temperature 76°F to 80°F; winds 1 to 3 mph; and cloud cover 30%.
[2]On 05/1/07, survey was conducted from 1000–1800; temperature 68°F to 76°F; winds 0 to 5 mph; and cloud cover 50%.



SOURCES: Dudek 2007a, 2007b. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Valley Elderberry Longhorn Beetle Survey Areas

FIGURE D.1-1

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1.4 SPECIAL-STATUS AMPHIBIAN AND REPTILE SPECIES

Focused on-site surveys for special-status amphibian and reptile species were conducted for the following species:

- Western spadefoot (*Spea* [*Scaphiopus*] *hammondii*), a CSC species
- Tehachapi slender salamander, a state-listed threatened species
- Yellow-blotched salamander (*Ensatina eschscholtzii croceater*), a CSC species.

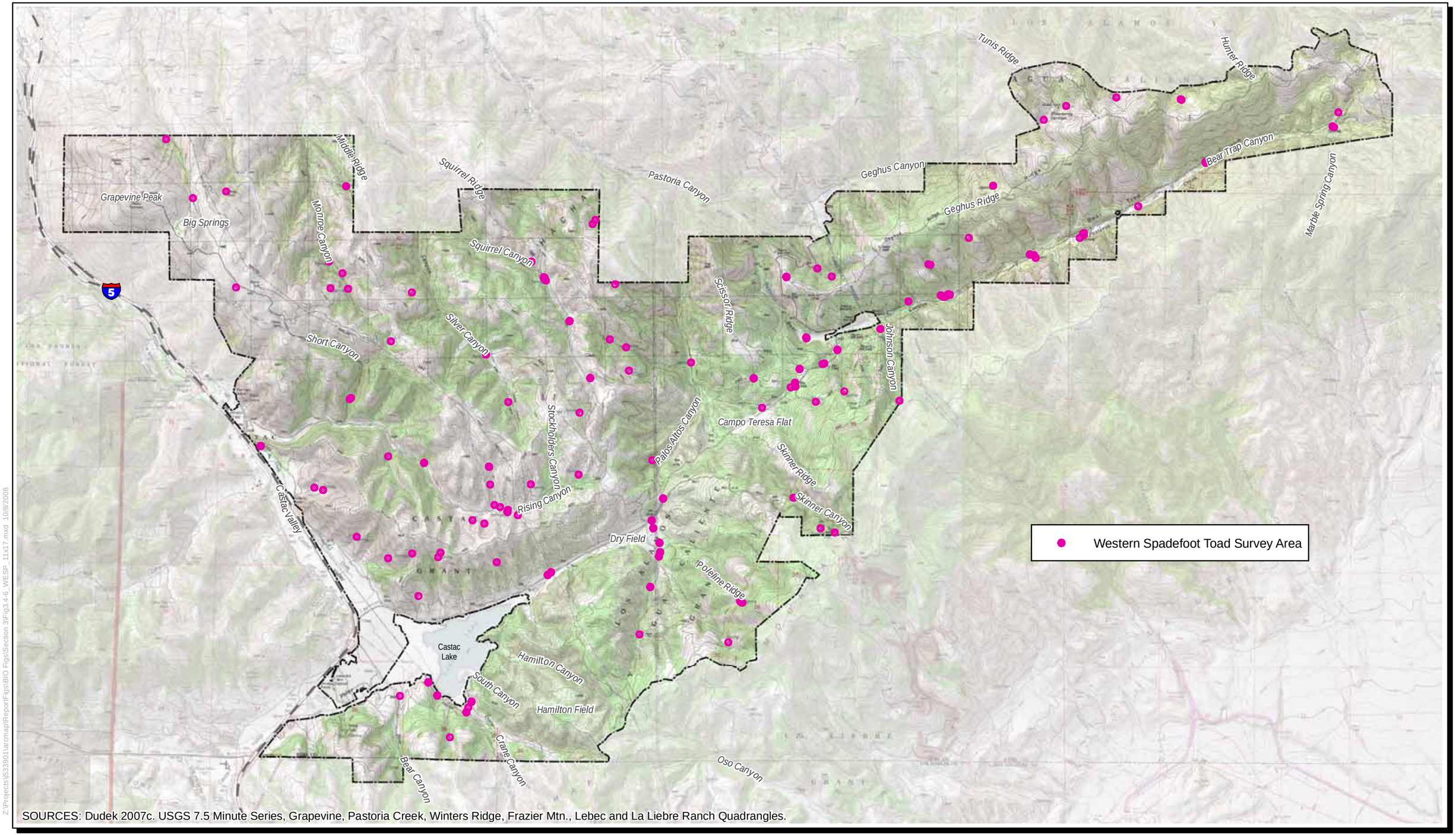
1.4.1 WESTERN SPADEFOOT TOAD

Dudek conducted focused surveys for western spadefoot toad larvae and/or adults and juveniles in appropriate areas of ponded water, seeps, and springs in the TMV Planning Area (see Figure D.1-2 of this appendix). These surveys occurred on eight occasions in conjunction with USFWS protocol-level fairy shrimp surveys, with survey areas reviewed at least one additional time when conducting habitat assessments or focused surveys for California red-legged frog.

The initial habitat assessment for western spadefoot (in conjunction with fairy shrimp surveys) was conducted a few weeks following the first rain events of 2007 (January 27th and 28th) to determine the abundance of suitable basins on site. Initial screening criteria for determining potential basin areas included mapped vegetation communities, topography, and elevation. Areas considered potentially suitable for western spadefoot included native and non-native grasslands, barren habitat, and oak savannah, within relatively flat areas (0%–10% slope) at elevations less than 3,500 ft.

The field habitat assessment was completed on three days: February 12th, 20th, and 21st. Follow-up ground surveys were conducted within 2 weeks of the initial habitat assessments. All identified basin locations in the TMV project area were evaluated during each survey to investigate inundation levels. If new rains occurred during survey season, all suitable areas identified during the initial habitat assessment were reevaluated and sampling was performed where appropriate. The surveyed basins were distributed throughout the study area and were of three main types: (1) road ruts: depressions typically formed by vehicular traffic within or adjacent to roadways that lack aquatic vegetation; (2) fauna drinking pools: depressions within grasslands that retain sufficient water volume, are heavily utilized by fauna for drinking and cleansing, and are very muddy and lack vegetation due to heavy continuous fauna disturbance; and (3) ephemeral pools: depressions within grasslands that retain sufficient water level, have abundant aquatic vegetation, and lack evident heavy fauna disturbance.

Surveys conducted in conjunction with fairy shrimp surveys occurred monthly during March, April, and May (see Table D.1-2). Ground surveys only included visits to areas where inundation was recorded during the habitat assessments, not the entire study area. Therefore, not all sites depicted in Figure D.1-2 were visited throughout the survey period. During each visit, all basins were inspected for depth of inundation, surface area of water, air and water temperature, level of disturbance, and presence of aquatic wildlife. All information was recorded on a data sheet as provided in the Fairy Shrimp Survey Protocol with the most pertinent information (i.e., inundation species, species identification) recorded on a survey log. Each pool was visually inspected and or dip-netted for the presence of spadefoot toad larvae during the surveys. For every inundated basin that met USFWS protocol related to fairy shrimp, an aquarium net was passed through nearly all portions of the ponded water from the bottom to the surface and surveyors identified fairy shrimp and tadpoles where present. Where dip-netting was not conducted, surveys for tadpoles were visual. The additional surveys for western spadefoot conducted in conjunction with the red-legged frog surveys were conducted in June and August.



SOURCES: Dudek 2007c. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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DUDEK

Tehachapi Upland MSHCP

Western Spadefoot Toad Survey Areas

FIGURE D.1-2

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Table D.1-2. Western Spadefoot Toad Survey Schedule and Conditions

Date	Survey Type	Personnel	Time	Air Temp. (°F)	Avg. Water Temp. (°C)
02/12/07	Habitat assessment	TSL	NR	NR	NR
02/20/07	Habitat assessment	MSE, TSL	NR	NR	NR
02/21/07	Habitat assessment	MSE, TSL	NR	NR	NR
02/28/07	Focused survey	MSE	1256–1706	2	11
03/05/07	Focused survey	BAO	1300–1541	24	17
03/05/07	Focused survey	JTS, MLW	—	NR	NR
03/06/07	Focused survey	BAO	0915–1623	22	16
03/15/07	Focused survey	MSE	1000–1005	14	17
03/20/07	Focused survey	BAO	1455–1500	20	14
03/21/07	Focused survey	BAO	0655–1159	9	9
03/29/07	Focused survey	BAO	0920–1215	15	14
04/03/07	Focused survey	BAO	1249–1830	22	22
04/04/07	Focused survey	MSE	1200–1301	20	19
04/09/07	Focused survey	MLW, SMD	—	64	63
04/10/07	Focused survey	MLW, SMD, SMB	—	42–59	53–64
04/10/07	Focused survey	MLW, SMD	1100–1545	65	65–69
04/11/07	Focused survey	MLW, SMD	0915–NR	NR	NR
04/16/07	Focused survey	MLW, JTS	—	47–54	54
04/16/07	Focused survey	MLW, JTS	1430–1645	49–62	54–64
04/17/07	Basin sampling	VRJ	1056–1740	19	22
04/17/07	Focused survey	MLW, JTS	—	42–50	50–57
04/17/07	Focused survey	MLW, JTS	0945–1445	51–64	54–65
04/18/07	Basin sampling	VRJ	0805–1636	2	6
04/25/07	Focused survey	MLW, JSH	—	54–55	56
04/25/07	Focused survey	MLW	1000–NR	54–60	48–56

Table D.1-2 (Continued)

Date	Survey Type	Personnel	Time	Air Temp. (°F)	Avg. Water Temp. (°C)
04/26/07	Focused survey	MLW, JSH	—	NR	NR
05/01/07	Basin sampling	MSE	1241–1831	27	26
05/16/07	Basin sampling	VRJ	1400–1839	21	20
05/16/07	Focused survey	BAO	1300–1800	65	58
05/29/07	Basin sampling	TSL	1642–1648	23	28
06/10/07	Focused survey	BAO	—	64–70	63
06/10/07	Focused survey	BAO	1235–1910	70–75	63
08/22/07	Focused survey	BAO	2030–0010	70–75	67
08/23/07	Focused survey	BAO	1130–1530	85–90	67

Personnel key:
BAO: Brock Ortega; JDP: Jeff Priest; MLW: Manna Warburton; JTS: Travis Smith; JSH: Joanna Hsu; PML: Paul Lemons; SMB: Scott Boczkiewicz; SMD: Scott Duff, MSE: Megan Enright, TSL: Thomas Liddicoat; VRJ: Vipul Joshi.
NR = Not recorded.

1.4.2 TEHACHAPI SLENDER SALAMANDER

There are no accepted survey protocols for determining presence/absence of Tehachapi slender salamander or standardized methods to assess suitable habitat. Site-specific survey methods were based primarily on canopy cover percentage, canopy vegetation, substrate information obtained during initial reconnaissance-level surveys and a literature review of suitable habitat features, microhabitat requirements, and general biology of the Tehachapi slender salamander. Established protocols for other salamander species in California (e.g., Del Norte salamander (*Plethodon elongatus*), Siskiyou Mountain salamander (*Plethodon stormi*)) and the survey methodologies used by Pacific Wildlife Research for Oregon slender salamanders (*Batrachoseps wrighti*) were consulted to develop survey methods for Tehachapi slender salamander.

The surveys for Tehachapi slender salamander were conducted in four phases within the TMV Planning Area. The first phase occurred in April and June 2005 and consisted of initial reconnaissance-level surveys for Tehachapi slender salamander to: (1) assess potential on-site suitable habitat; and (2) determine if the species could be detected during April through June (see Table D.1-3). Reconnaissance-level habitat assessments included drainage information regarding the percentage of canopy cover and dominant species present; the percentage of terrestrial cover (or understory) and type of understory cover; aquatic substrate; bank slope; stream aspect;

disturbance; species presence/absence and location, if applicable; and terrestrial cover type. These field-collected data were combined with GIS drainage data to create a map of potentially suitable Tehachapi slender salamander habitat within the TMV Planning Area. Drainages that were identified as having the following attributes were considered to be potentially suitable for Tehachapi slender salamander: a moderate to high canopy cover (equal to or greater than 50%) of certain tree species (canyon live oak (*Quercus chrysolepis*), valley oak (*Quercus lobata*), California buckeye (*Aesculus californica*), and other riparian-associated species); a low percentage of cover of annual grasses in the drainage (typically less than 30% cover); and the presence of leaf litter, woody debris, and rock/talus.

Tehachapi slender salamanders were detected in the TMV Planning Area in Monroe Canyon during the first phase of the survey, and the identification was confirmed by Dr. Wake, Professor of the Graduate School, Department of Integrative Biology, and Curator of Herpetology in the Museum of Vertebrate Zoology at the University of California, Berkeley. The reconnaissance-level survey also developed a general understanding of the on-site habitat features most suitable for the Tehachapi slender salamander based on existing, publicly available information on the salamander and the habitat features present in the observed areas of occupancy in Monroe Canyon and in two locations in Bear Trap Canyon previously reported in the CNDDB.

The second phase of surveys was conducted on March 26 and March 27, 2007, and included additional drainages that were not surveyed in 2005 and 2006 to assess the suitability of additional habitat for Tehachapi slender salamander within the TMV Planning Area using the criteria previously described. Based on the reconnaissance surveys conducted in phases one and two, 75 drainages were identified as supporting suitable habitat for Tehachapi slender salamander. The drainages that were selected for conducting focused surveys typically included all or most of the habitat attributes listed previously.

The third phase entailed focused surveys of the 75 drainages identified during phases one and two to determine if these locations were occupied by the species.

Focused surveys of these drainages were conducted between May 7 and May 25, 2007, and concentrated on the areas located 20 ft on either side of the streambed within the drainages where areas generally remain moist for the longest period during the summer. Within these drainages and associated slopes, the biologists carefully overturned logs and rocks and sifted through leaf litter. To reduce any potential impact of the surveys on these species, the biologists focused on identification of salamanders that were active on the surface rather than those underground. Additionally, the surveys were only conducted in drainages that had flowing water or were moist. Those drainages that appeared to provide suitable habitat but were dry were not surveyed because salamanders are typically underground if moist surface conditions are not present. To

avoid impacts to these species, no digging or excavating occurred during the survey, and all logs and rocks that were moved were returned as closely as possible to their original location.

Information recorded during the focused surveys included the survey date; the surveyors' names; the drainage number; beginning and end times of the survey; the air temperature (taken 1 cm above the ground surface), soil temperature, and soil moisture; cloud cover; precipitation; documentation that freezing did not occur within 24 hours of the survey; habitat conditions of the drainage; drainage aspect; drainage slope; ground cover; canopy cover; and common and scientific names of the species observed. Photographs were taken of all drainages surveyed and the locations of the surveyed areas were documented using a GPS unit (Garmin eTrex GPS unit, generally accurate to approximately 3 m). All Tehachapi slender salamanders observed were photographed and their locations documented using the GPS unit.

A fourth phase habitat assessment was conducted in July, August, and September 2007 and consisted of supplementary field assessments in several additional drainages. A jurisdictional wetland delineation prepared for the TMV project (Impact Sciences 2008) was used to create an updated, comprehensive drainage map of the TMV Planning Area (see Figure D.1-3 of this appendix). Additional habitat assessments were conducted in previously unsurveyed drainages identified in the delineation to evaluate habitat quality for the species. The habitat assessments focused on areas in and within 20 ft of the streambed. The biologists walked the drainages and recorded the extent of areas considered suitable for the salamander, including canopy cover, dominant canopy species, and ground cover on a map and on field data forms.

Table D.1-3 summarizes the Tehachapi slender salamander survey schedule and includes the date, drainage number surveyed, personnel, survey type, time, and other survey conditions.

Table D.1-3. Tehachapi Slender Salamander Survey Schedule and Conditions

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
04/01/2005	Not Recorded	Reconnaissance Survey	WHK	Not Recorded	Not Recorded	Not Recorded
06/16/2005	32-1	Reconnaissance Survey	WHK	11:00–12:00	74	50
06/17/2005	32-1; 57-1; 57-2; 67-1; 69-2; 69-2; 80-1; 81-1; 81-2; 91-1; 95-1; 102-1; 106B	Reconnaissance Survey	WHK	7:30–2:00	59–76	100
03/26/2007	33-1; 33-2; 34-1; 35-1; 107-1; 108-1	Habitat Assessment	WHK, SRA	8:00–2:00	Not Recorded	Not Recorded
05/07/2007	14-1; 32-1; 15-1; 15-2; 6-1; 12-1; 33A-1; 33A-2; 33A-3	Focused Survey	WHK, KAM	8:30–5:41	41–70	0

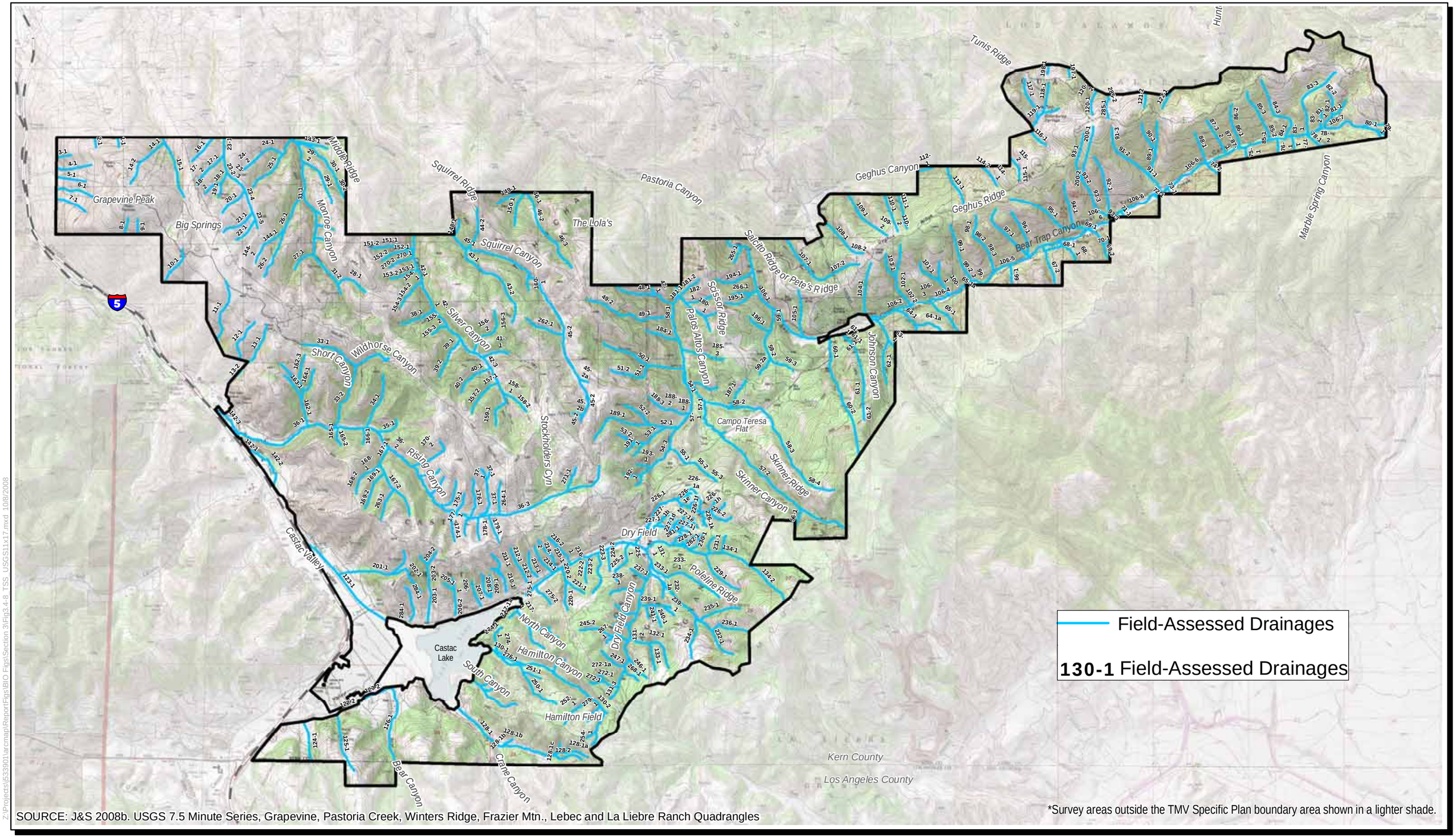
Table D.1-3 (Continued)

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
05/08/2007	34-1; 34-2; 35-1; 35-2; 36-1; 36-2; 36-3; 37-1; 42A-1; 42A-2; 42A-3	Focused Survey	WHK, KAM	7:35–4:00	45–77	0
05/09/2007	42A-4; 42A-4; 38-1	Focused Survey	WHK, KAM	8:05–4:30	49–77	0
05/10/2007	23-1; 25-1; 25-2; 25-3; 31-1; 30-1	Focused Survey	WHK, KAM	9:15–3:46	55–76	0
05/14/2007	140; 124; 129; 131A-1; 131A-2; 132-1; 133-1; 132-2; 131A-3; 131A-4; 135-1; 135-1; 135-1; 136-2; 136-3	Focused Survey	KAM, KTM	8:25–2:40	47–74	0
05/15/2007	27-1; 26-1;26-2; 26-3; 45A	Focused Survey	KAM, KTM	8:00–2:50	51–73	0
05/16/2007	44; 43; 46-1; 58A-2; 48-1; 47; 58A-3; 49-1; 58A-1	Focused Survey	KAM, KTM	8:00–4:06	54–76	0
05/17/2007	106A-2 to 4; 50-1; 51-1; 57A-1; 57A-2; 57A-3; 56; 80-1; 79; 106A-1	Focused Survey	KAM, KTM	7:20–3:48	50–73	0
05/22/2007	63; 62-1; 62-2; 64; 65-1; 65-2; 66; 78-1; 78-2; 77; 76; 75; 74; 73; 72; 71; 69-1; 70; 69-2	Focused Survey	HS, KAM	8:58–5:00	50–68	50
05/23/2007	67-1; 67-2; 68; 106A-W; 107A-1; 107A-2; 108-1; 109-1; 109-2; 109-3; 41)	Focused Survey	HS, KAM	7:58–4:30	50–78	0
05/24/2007	118; 114; 113A-1; 113A-2; 111-1; 111-2; 110-1; 110-2; 108-2; 121; 55; 55-2; 55-3; 54; 53-1; 52-1; 53/5-1; 53/5-2)	Focused Survey	HS, KAM	7:15–6:10	54–79	0
05/25/2007	53-2; 53-3; 52-5-1; 52-2; 52-3; 52-5-3	Focused Survey	HS, KAM	7:17–10:12	53–70	1
07/23/2007	1; 2; 3; 4; 5; 7; 8; 9	Habitat Assessment	WHK, JLC	1:45–5:16	82–85	Not Recorded
07/24/2007	10; 11; 13; 33B; 125; 127;	Habitat Assessment	WHK, JLC	8:10–2:40	78–92	Not Recorded
07/25/2007	16; 17; 18; 19; 20; 21; 22; 23; 28; 29	Habitat Assessment	WHK, JLC	7:50–2:55	80–92	Not Recorded
07/26/2007	40; 42B; 45B; 57B; 58B	Habitat Assessment	WHK, JLC	7:50–10:45	74–84	Not Recorded
08/08/2007	91; 92; 93	Habitat Assessment	WHK, JLC	12:42–2:48	75–79	Not Recorded
08/09/2007	94; 95; 96; 97; 98; 99; 100; 101; 102; 103; 104	Habitat Assessment	WHK, JLC	7:52–4:58	65–85	Not Recorded
08/10/2007	106B	Habitat Assessment	WHK, JLC	10:40–11:00	79	Not Recorded

Table D.1-3 (Continued)

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
09/12/2007	161; 162; 163; 164; 165; 166; 167; 168; 169; 170; 171; 172; 173; 174; 175; 263;	Habitat Assessment	KAM, EKH	8:10–3:18	64–90	0
09/13/2007	143; 144; 145; 146; 147; 176; 177; 178; 179; 202; 203; 204	Habitat Assessment	KAM, EKH	9:35–5:00	53–73	98
09/14/2007	151; 152; 153; 154; 155; 156; 157; 158; 159; 201; 205; 206; 270	Habitat Assessment	KAM, EKH	8:00–1:30	50–67	5
09/23/2007	207; 208; 209; 210; 211; 212; 213; 214; 215; 216; 248; 249; 250; 251	Habitat Assessment	KAM, EKH	10:25–5:12	58-67	5
09/24/2007	228; 229; 230; 231; 232; 233; 234; 235; 236; 237; 238; 239; 241; 242; 243; 244; 246; 247; 252; 253; 254; 255; 256; 257; 258; 259; 260; 261; 267; 268; 269	Habitat Assessment	KAM, EKH	7:05–5:40	49–83	3
09/25/2007	180; 181; 182; 183; 184; 185; 186; 187; 188; 189; 190; 191; 192; 193; 217; 218; 219; 220; 221; 222; 223; 224; 225; 226; 227; 245	Habitat Assessment	KAM, EKH	7:10–5:50	54–79	5
09/26/2007	148; 149; 150; 160; 194; 195; 196; 197; 198; 199; 200; 262; 263; 264; 265; 266	Habitat Assessment	KAM, EKH	6:45–2:10	53–87	5

Personnel key:
WHK: Will Kohn; SRA: Steve Avery; KAM: Kara Martinusen; KTM: Kailash Mozumder; HS: Holly Shepley; JLC: Julia Camp; EKH: Erin Hitchcock.



SOURCE: J&S 2008b. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Drainages Included in Special-Status Salamander Field Surveys

FIGURE D.1-3

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Habitat Modeling and Data Quality Assurance

On July 19, 2008, Dudek and J&S biologists met with Tehachapi slender salamander experts Dr. David Wake, Professor of the Graduate School at the University of California, Berkeley, and Mr. Robert Hansen, Editor of Herpetological Review, to review the suitable habitat analysis and location of Tehachapi slender salamanders on the site and to confirm species identification. Based on input from Dr. Wake and Mr. Hansen, the key habitat features for Tehachapi slender salamander were determined to include vegetation communities with canyon live oak as a dominant species, north-facing slopes, talus, and moderate to high percent canopy cover. In addition, based on existing observation, the species was determined to not occur above 5,000 ft in elevation. Following the meeting, Dudek prepared a habitat suitability model, which is discussed further in Appendix D of the TU MSHCP.

1.4.3 YELLOW-BLOTCHED SALAMANDER

There is one CNDDB record documenting the detection of yellow-blotched salamander within the TMV Planning Area. A yellow-blotched salamander was also observed during a June 2005 reconnaissance survey. Surveys for yellow-blotched salamander were conducted concurrently with surveys for Tehachapi slender salamander using the same field methods described previously in Section 1.4.2. Although the two salamander species can and do co-occur, the yellow-blotched salamander has a broader geographical, elevational, and ecological distribution than Tehachapi slender salamander. Because the primary focus of the salamander surveys was on Tehachapi slender salamander, it is expected that yellow-blotched salamander could also occur in habitat areas that were not surveyed. Locations of yellow-blotched salamanders observed during the Tehachapi slender salamander surveys were recorded with a GPS unit (Garmin eTrex GPS unit, generally accurate to approximately 3 m) and habitat requirements for the species were discussed during the July 19, 2008, meeting with Dr. Wake and Mr. Hansen, as described previously. While a separate habitat model was not developed for the yellow-blotched salamander for the purposes of directing field surveys, a habitat model for yellow-blotched salamander was subsequently developed for the conservation analysis and is discussed in more detail in Appendix D of the TU MSHCP. As noted previously, the yellow-blotched salamander has broader habitat associations than Tehachapi slender salamander, which are reflected in the habitat model in Appendix D of the TU MSHCP.

1.4.4 OTHER REPTILE SPECIES PRESUMED TO OCCUPY THE SITE

Based on the literature review and site reconnaissance, the following two reptile species were determined or assumed to be present on the site and appropriate habitat was modeled for each species:

- Coast horned lizard (*blainvillii* and *frontale* populations)
- Two-striped garter snake.

1.5 SPECIAL-STATUS BIRDS

This section discusses the wintering and breeding focused bird surveys conducted within the TMV Planning Area.

Breeding bird focused surveys included the following: (1) species-specific surveys for species with official USFWS survey protocols (i.e., generally species that are Federally listed, state-listed, and/or Fully Protected); (2) species-specific surveys for which there are no official USFWS protocols but have generally accepted, scientific- or resource-agency-supported survey guidelines or methods; and (3) surveys for groups of special-status bird species that have similar habitat preferences, specifically riparian birds, general raptors, and aquatic/marsh/meadow birds.

The following subsections describe the focused bird surveys that were conducted in 2006 and 2007 in the TMV Planning Area. However, bird surveys were also conducted prior to the 2006–2007 surveys in 2004 by Impact Sciences, Inc., (2004) and 2005 by J&S (2006). This survey information was incorporated into the species database analyzed for the TU MSHCP and EIS. The focus of the Impact Sciences, Inc., 2004 bird surveys was to identify special-status species of birds expected to nest in the TMV Planning Area. These surveys were conducted from January 26 to 30, March 1 to 5, and July 12 to 15. The January surveys were conducted to identify any wintering special-status bird species that may use the site, particularly Castac Lake. Surveys for special-status birds were also conducted concurrently with plant surveys from April 26 to May 1 and June 14 to 20, 2004. Birds observed during the course of the surveys were identified to species and, if special-status, locations were mapped. The J&S bird surveys were conducted from March 28 to June 21, 2005, and included raptor nesting surveys on five separate days from March 28 to April 1. Other nesting bird surveys were conducted on four separate days from April 25 to April 28: a purple martin (*Progne subis*) and northern goshawk (*Accipiter gentilis*) survey on May 27; an evening California spotted owl (*Strix occidentalis*) survey on May 27; a willow flycatcher (*Empidonax traillii*) and purple martin at Bear Trap on June 8; a willow flycatcher, purple martin, and northern goshawk survey at Castac Lake on June 9; a golden eagle (*Aquila chrysaetos*) nest check on June 17 and June 20; and a willow flycatcher and purple martin survey at Castac Lake on June 21.

1.5.1 FEDERALLY LISTED AND STATE-LISTED BIRDS

Focused surveys for the following Federally and state-listed birds were conducted by Dudek in accordance with established USFWS or CDFG survey protocols:

- Least Bell's vireo (*Vireo bellii pusillus*)
- Southwestern willow flycatcher (*Empidonax extimus traillii*)

- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*).

The following species do not have established USFWS survey protocols but are subject to generally accepted survey methods based on current scientific understanding of the species' habitat preferences and life history:

- American peregrine falcon (*Falco peregrinus anatum*)
- Bald eagle (*Haliaeetus leucocephalus*)
- California condor (*Gymnogyps californianus*).

Listed Riparian Birds

Focused surveys were conducted for least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo.

General Survey Methods

Focused riparian bird surveys were divided into four survey areas (Areas 1–4) due to the size and the distribution of suitable habitat on the site. These survey areas generally included riparian habitat adjacent to Castac Lake and suitable habitat patches located within Bear Trap Canyon and Rising Canyon. Approximately 87 ac. of suitable riparian forest habitat on or adjacent to the TMV Planning Area were surveyed to ensure that the survey was as comprehensive as possible (see Figure D.1-4).

Surveyors included biologists Brock A. Ortega (TE813545-6), Jeff D. Priest (TE840619-2), Anita M. Hayworth, PhD (TE781084-7), John Konecny (TE837308-4), Paul M. Lemons (TE051248-2), Thomas Liddicoat, and Scott M. Duff (Table D.1-4). Only biologists holding permits to conduct surveys for southwestern willow flycatcher, including Brock Ortega, Jeff Priest, Anita Hayworth, and John Konecny, conducted surveys for southwestern willow flycatcher. Biologist John Konecny conducted all western yellow-billed cuckoo surveys concurrently with southwestern willow flycatcher and least Bell's vireo surveys. Biologists Thomas Liddicoat, Scott Duff, and Paul Lemons conducted least Bell's vireo surveys only. The entire area of suitable habitat was surveyed for southwestern willow flycatcher and least Bell's vireo a total of 35 times.

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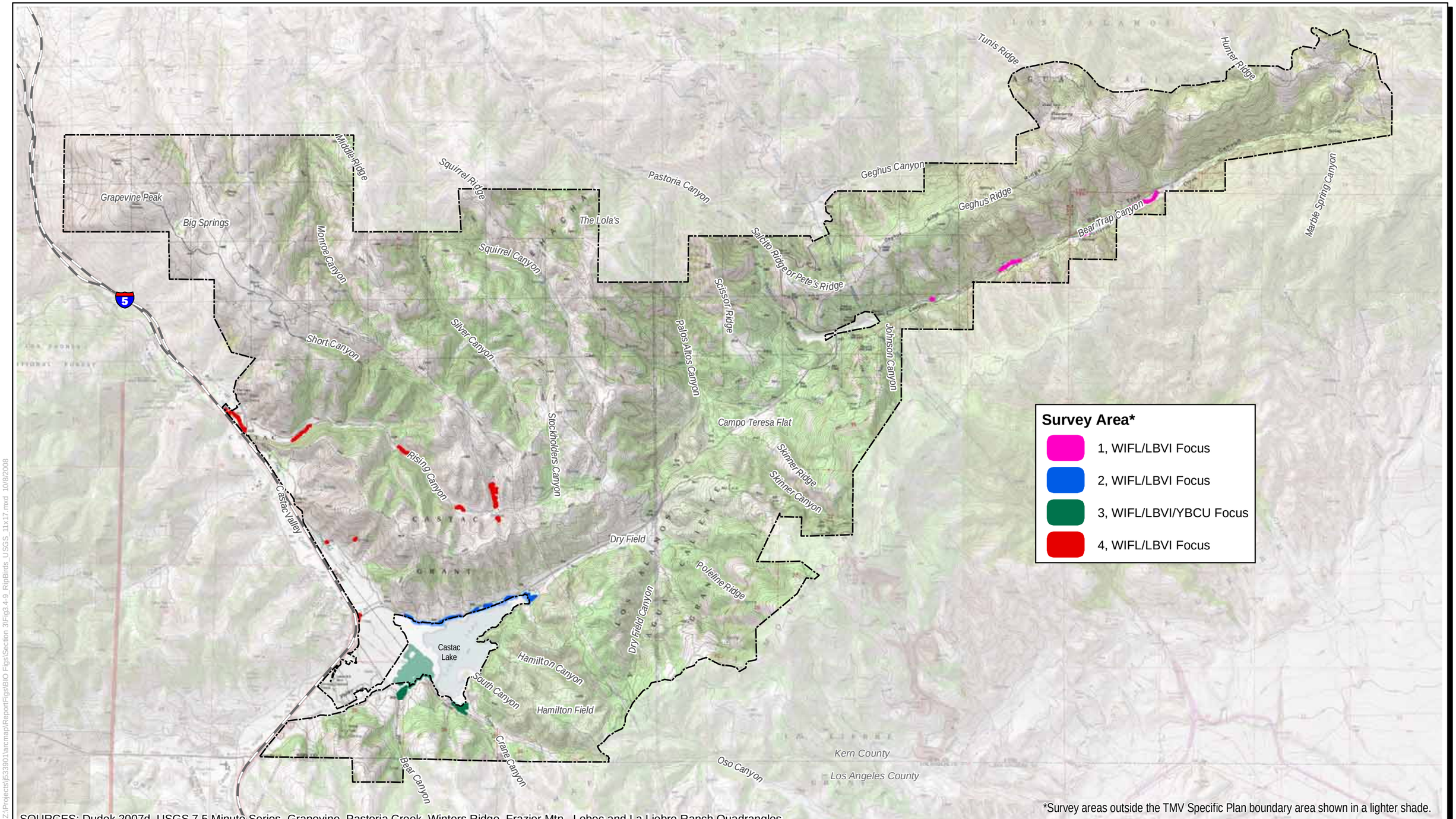

SOURCES: Dudek 2007d. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Special-Status Riparian Bird Survey Areas

FIGURE D.1-4

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Southwestern Willow Flycatcher Specific Survey Methods

A recovery permit pursuant to Section 10(a)(1)(A) of FESA is required to conduct presence/absence surveys for the southwestern willow flycatcher. The surveys followed the current protocol (Sogge et al. 1997; USFWS 2000), which states that a minimum of five survey visits are necessary to evaluate TMV project effects on flycatchers (USFWS 2000). In accordance with the protocol, one survey was conducted in each of the four survey areas during the period from May 15 to 31, one survey was conducted in each of the four survey areas between June 1 and 21, and three surveys were conducted in each of the four survey areas between June 22 and July 17 at a minimum of 5-day intervals. All four survey areas were surveyed a total of five times for the presence of southwestern willow flycatcher during the three survey time periods (see Table D.1-4).

Table D.1-4. Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-Billed Cuckoo Survey Schedule and Conditions

Date	Personnel	Focal Species	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
Area 1 – Bear Trap Canyon						
04/23/07	TSL	LBVI[1]	0730–1130	36	2–9	100
05/03/07	PML	LBVI	0700–1130	48–54	3–6	100
05/16/07	BAO	LBVI/WIFL[2]	0500–1115	50–65	0–3	0
05/30/07	AMH	LBVI	0600–1100	55–75	1–3	0
06/11/07	BAO	LBVI/WIFL	0510–1100	54–77	1–5	0–10
06/22/07	BAO	LBVI/WIFL	0630–1100	58–70	0–5	30
07/02/07	AMH	LBVI/WIFL	0540–1030	60–78	1–7	10–0
07/16/07	JDP	LBVI/WIFL	0515–1045	58–83	0–3	0
07/30/07	TSL	LBVI	0600–1000	55–88	0–2	0
Area 2 – Shoreline of Castac Lake (North Side)						
04/23/07	SMD	LBVI	0700–1230	40–60	0–3	100–80
05/03/07	SMD	LBVI	0700–1230	45–69	0–3	99–20
05/23/07	JK	LBVI/WIFL	0540–0950	63–71	1–3	0
06/02/07	JK	LBVI/WIFL	0540–0935	61–74	3–5	50
06/23/07	JK	LBVI/WIFL	0530–0925	61–78	1–3	0
07/07/07	JK	LBVI/WIFL	0535–0955	61–89	3–10	0
07/17/07	JK	LBVI/WIFL	0530–0945	61–89	3–10	0
07/31/07	TAC	LBVI	0600–1000	65–75	0–1	0
Area 3 – Cuddy Creek (South Side)						
04/24/07	TSL	LBVI	0700–1100	48	0–4	0
05/04/07	PML	LBVI	0730–1130	55–66	2–4	0
05/24/07	JK	LBVI/WIFL	0545–0955	64–70	1–3	0

Table D.1-4 (Continued)

Date	Personnel	Focal Species	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
06/03/07	JK	LBVI/WIFL	0530–1000	63–78	1–5	30
06/24/07	JK	LBVI/WIFL/YBCU[3]	0535–1010	61–76	1–3	0
07/8/07	JK	LBVI/WIFL/YBCU	0540–1000	53–83	3–6	0
07/18/07	JK	LBVI/WIFL/YBCU	0545–1010	53–83	3–6	0
07/26/07	TAC	LBVI	0600–1030	65–70	0–1	0
08/17/07	JK	YBCU	0550–1020	65–93	3–9	0
Area 4 – Rising Canyon and Grapevine Creek						
04/24/07	SMD	LB VI	0700–1230	45–60	0–5	0
05/04/07	SMD	LBVI	0830–1300	48–64	0–6	100–80
05/17/07	BAO	LBVI/WIFL	0500–1110	53–75	0–1	0
05/29/07	AMH	LBVI	0600–1100	56–84	1–3	0
06/12/07	BAO	LBVI/WIFL	0530–1030	57–70	1–4	0
06/23/07	BAO	LBVI/WIFL	0610–1015	60–78	1–5	50–20
07/03/07	AMH	LBVI/WIFL	0545–1045	61–76	3–6	0
07/17/07	JDP	LBVI/WIFL	0500–1045	55–76	0–1	0
07/31/07	TSL	LBVI	0615–1020	59–91	0–2	0

Personnel key:
TSL: Thomas Liddicoat; PML: Paul Lemons; BAO: Brock Ortega; AMH: Anita Hayworth; JDP: Jeff Priest; SMD: Scott Duff; JK: John Konecny; TAC: Traci Caddy.
[1]WIFL = southwestern willow flycatcher.
[2]LBVI = least Bell's vireo.
[3]YBCU = yellow-billed cuckoo.

Three visits were conducted during the final survey period in order to determine whether any flycatchers observed during the first two survey periods were resident. Various subspecies of this species are not easily differentiated visually or by call or song in the field, and any resident willow flycatchers observed in the final survey period were assumed to be the "southwestern" subspecies. Non-resident willow flycatchers were assumed to be migrant willow flycatchers.

The surveys began as soon as it was light enough to walk safely until approximately 11:00 a.m. A tape of recorded southwestern willow flycatcher vocalizations was played approximately every 50 to 100 ft within suitable habitat to induce willow flycatcher responses. A "Willow Flycatcher Survey and Detection Form" was filled out for each survey visit.

Least Bell's Vireo Specific Survey Methods

A Section 10(a)(1)(A) permit is not required to conduct focused surveys for least Bell's vireo. The surveys for least Bell's vireo followed the current protocol (USFWS 2001), which requires a minimum of eight survey visits to all riparian areas and any other potential vireo habitats during the period of April 10 to July 31. A minimum of 10-day intervals separated each visit in accordance

with the protocol. Surveys were conducted between dawn and 11:00 a.m. by a qualified biologist familiar with least Bell's vireo songs, calls, and plumage. All four survey areas were surveyed at least eight times for the presence of least Bell's vireo in accordance with the USFWS protocol for this species. Survey areas 1 and 4 received one additional survey, for a total of nine least Bell's vireo surveys.

Western Yellow-Billed Cuckoo Specific Survey Methods

A recovery permit pursuant to Section 10(a)(1)(A) is not required to conduct surveys for the western yellow-billed cuckoo. Surveys for the cuckoo were conducted by John Konecny (Biological Resource Consultants). Mr. Konecny holds a memorandum of understanding (MOU) from CDFG that allows for the use of tape playbacks. The survey method for determining presence or absence of the western yellow-billed cuckoo followed the Halterman and Johnson (2003) draft protocol. A total of four survey visits were made to the suitable habitat during the breeding season between June 15 and August 17, at approximate 10- to 14-day intervals. The survey method included visiting the site between 6:30 a.m. and 12:00 p.m. Survey transects were spaced no more than 300 ft apart and a recorded call was played every 600 ft in accordance with the protocol. A maximum of 2.5 linear mi. of suitable habitat was surveyed per day.

Listed Raptors

American Peregrine Falcon Survey Methods

There is no official protocol survey method for determining the presence or absence of the American peregrine falcon.

Peregrine falcons nest almost exclusively on protected ledges of high cliffs (CDFG 1980; USFWS 1982). All large rock outcrops and cliffs located within the TMV Planning Area were surveyed for peregrine falcon activity, including large rock outcrops in Rising Canyon, Skinner Canyon, Grapevine Peak, Pastoria Canyon, and Salcito Ridge (see Figure D.1-5).

Two focused surveys were conducted by Dudek biologists during the time period when peregrines would be present and breeding. An initial survey was conducted on May 1, 2007, by Dudek biologists Anita M. Hayworth, PhD, and Brianna M. Wood. A second focused survey was conducted by Dudek biologist Rebekah M. Krebs on July 7, 2007 (see Table D.1-5). Surveys were conducted on days with suitable weather conditions (i.e., moderate temperatures, no rain, and moderate or no wind). The biologists conducting the surveys were familiar with peregrine behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15–60× and Bushnell 20–60× magnification) were used for viewing. A survey map at a suitable scale (1 in. = 400 ft) was prepared and observations of observed (if any) peregrines were mapped. Large rock outcrops and cliff faces were surveyed for whitewash, nests, and raptor activity. When signs of raptor activity were confirmed, these areas were observed for

a long enough period of time to identify the species of raptor utilizing the area. Rock outcrops adjacent to known raptor nests were observed to determine if the usage of the nest site was by peregrine falcon.

Table D.1-5. American Peregrine Falcon Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
05/01/07	AMH,BTW	0800–1000	68–76	0–5	50
07/07/07	RMK	0815–1400	78–93	5–10	0

Personnel key:

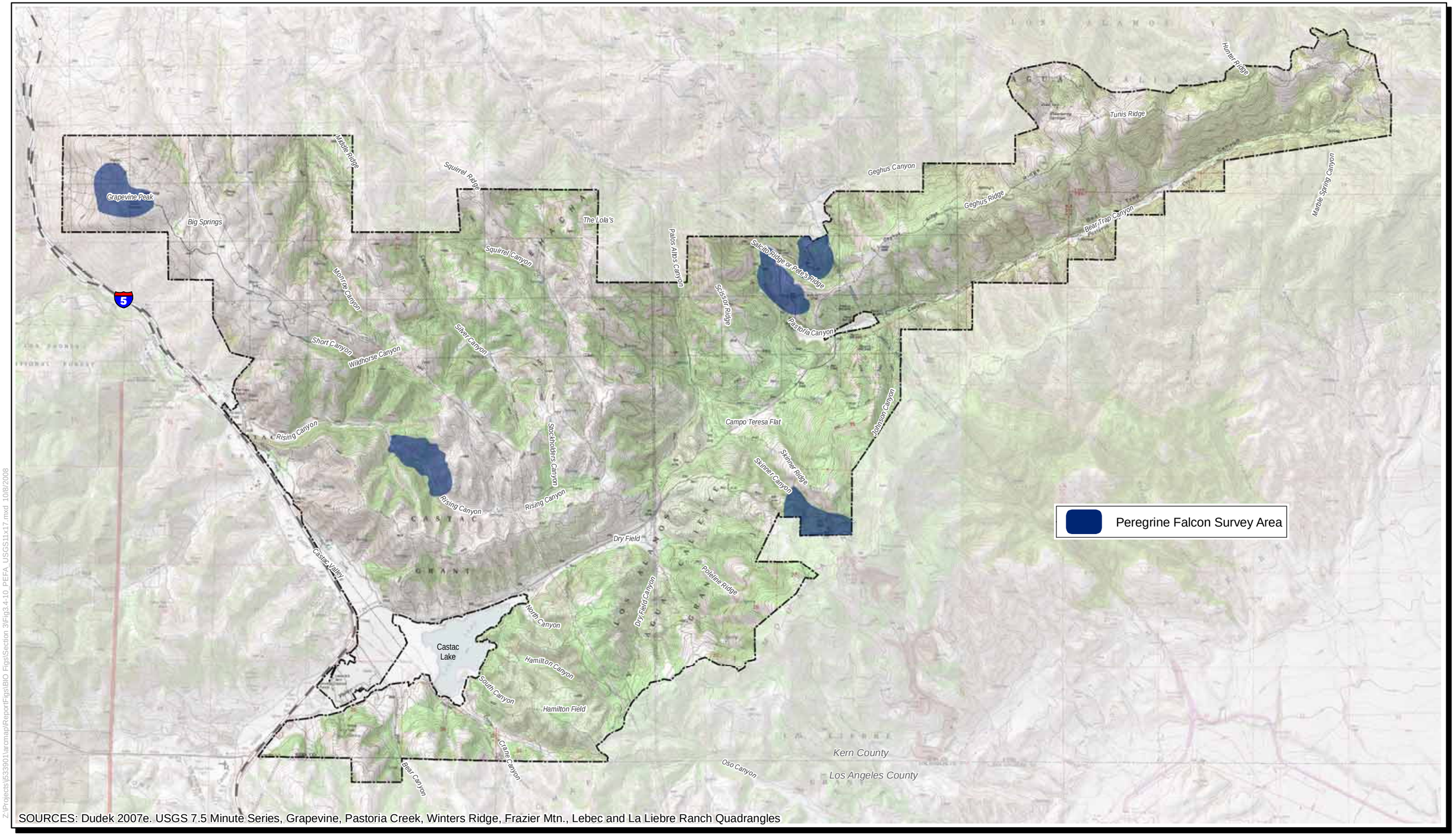
AMH: Anita Hayworth, PhD; BTW: Brianna Wood; RMK: Rebekah Krebs.

Other surveys were conducted on site that would have detected peregrine usage, including general raptor surveys, aquatic and marsh bird surveys, and bald eagle surveys (as discussed below). Raptor surveys focused on searching trees, fence lines, rock outcrops, and the ground for direct observation or evidence of raptor nesting. The aquatic and marsh bird surveys and bald eagle surveys included an inventory of all wildlife utilizing aquatic resources in and around Castac Lake.

Bald Eagle (Wintering and Nesting) Survey Methods

There is currently no established USFWS protocol to survey for the bald eagle. A survey protocol has been prepared by Pacific Gas & Electric (PG&E) for the USFWS (PG&E 2004) that provides a detailed description of methods to conduct surveys for wintering and nesting bald eagles. The PG&E protocol was used to conduct focused surveys within suitable habitat within the TMV Planning Area.

Suitable habitat for the bald eagle consists of a variety of natural structures, including ledges on cliffs, trees protruding from cliffs, and deciduous or coniferous trees found along or near major water bodies. The survey method recommends surveying applicable water bodies as well as a buffer area of 1 mi. Approximately 4,290 ac. within the TMV Planning Area were surveyed in accordance with these criteria (see Figure D.1-6 of this appendix). Observation of other piscivorous (fish-eating) birds, such as cormorants and osprey, was recorded to evaluate whether Castac Lake could support the bald eagle.



SOURCES: Dudek 2007e. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

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Peregrine Falcon Survey Areas

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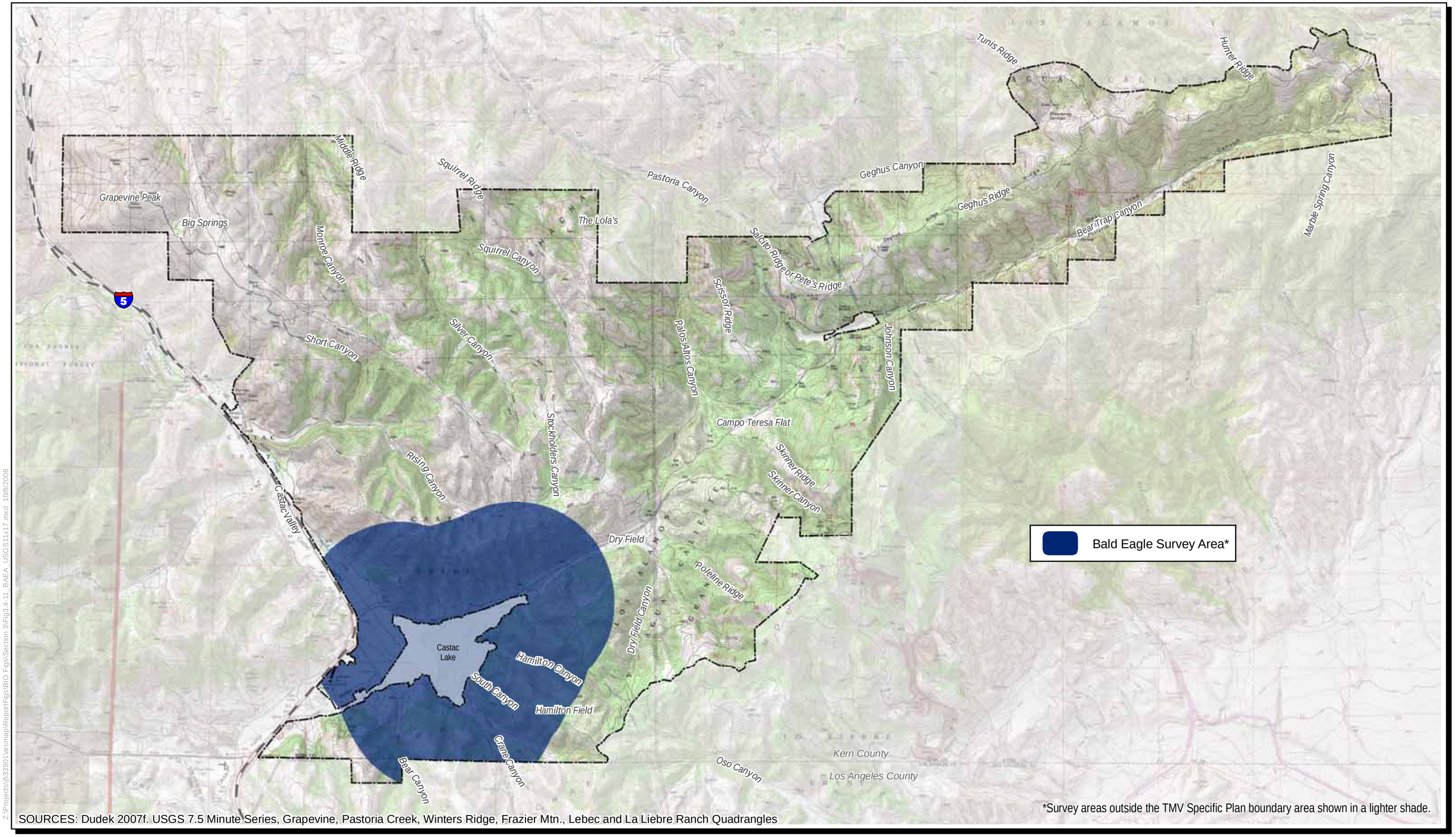

SOURCES: Dudek 2007f. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCPD

Wintering and Breeding Bald Eagle Survey Area

FIGURE D.1-6

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The survey for wintering eagles included three site visits conducted at monthly intervals and with no less than a 2-week interval between surveys (see Table D.1-6). Wintering bald eagle surveys were conducted by Dudek biologist Anita Hayworth, PhD, on December 29, 2006; January 30, 2007; and February 22, 2007. Each survey was conducted over an approximately 6.5- to 10-hour period and the lake and surrounding areas were scanned for bald eagles from several stationary locations. Suitable perching areas were observed using a road survey to look for eagles up to 1 mi. from the lake. The biologist conducting the survey was familiar with bald eagle behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. A survey map at a suitable scale (generally 1 in. = 400 to 1 in. = 800 ft) was prepared and observations of bald eagles were mapped.

The survey for nesting bald eagle was conducted when eagles were most likely to be found at the nest site and as early in the breeding season as possible. A total of three breeding surveys are recommended in the PG&E survey protocol (PG&E 2004). In accordance with the protocol, Dudek biologist Traci Caddy conducted breeding bald eagle surveys on March 19, May 29, and June 18, 2007 (see Table D.1-6). Surveys were conducted on foot and by vehicle and included searching for bald eagles and bulky nest structures along the lake and within a 1 mi. buffer around the lake. Each survey was conducted over an approximately 8- to 9-hour period. The biologist conducting the survey was familiar with bald eagle behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. A 1 in. = 600 ft survey map was used to map any observed bald eagle or nest locations.

Table D.1-6. Wintering and Breeding Bald Eagle Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
12/29/06	AMH	0800–1430	30–41	1–8	0
01/30/07	AMH	0630–1530	36–46	1–5	100
02/22/07	AMH	0625–1615	33–48	5–10	90
03/19/07	TAC	0730–1530	45–50	Not Recorded	0
05/29/07	TAC	0800–1700	65–70	0–5	0
06/18/07	TAC	0730–1630	65–75	Not Recorded	0

Personnel key:
AMH: Anita Hayworth; TAC: Traci Caddy.

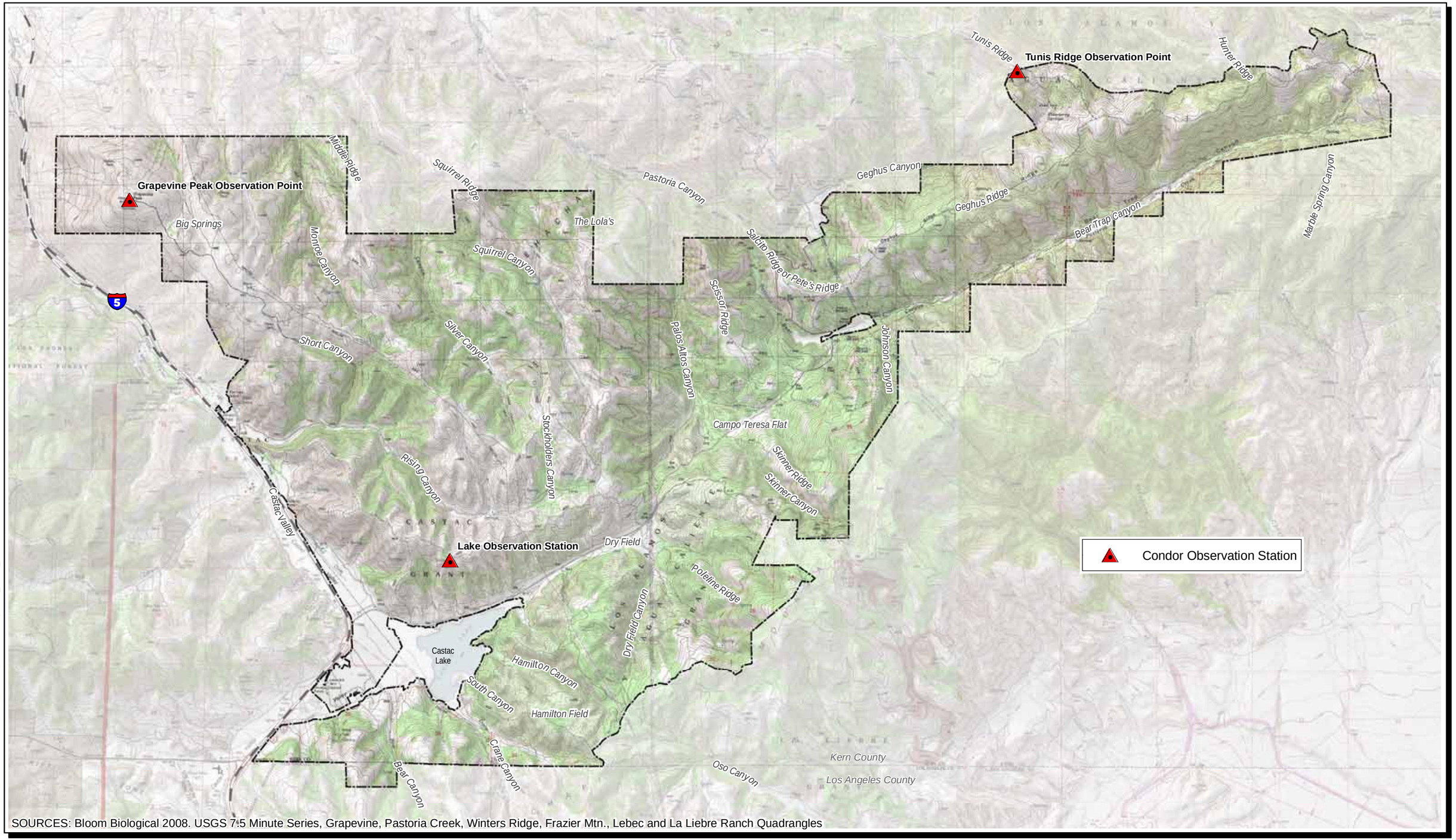
California Condor

Analyses regarding historical and current condor use of Tejon Ranch, including the TMV Planning Area, are based primarily on an evaluation of GPS data provided by the USFWS. In particular, a team of condor scientists (Condor Panel) retained for the TMV project and biologists from Dudek compiled and reviewed these data, which recorded condor location information within the southern California range of the species, including Tejon Ranch. The review included all GPS data recorded by the USFWS from 2002 (when the first condors carrying GPS transmitters were released) to

August 2009. The data were incorporated into a GIS program where it could then be overlain onto various project and habitat maps. The evaluation of the GPS data is discussed in more detail in the *Tejon Ranch California Condor Conservation and Management Plan*, which included data from 2002 to 2008, (Appendix C to the TU MSHCP), as well as in the Addendum to Appendix C, *California Condor Occurrence Data in Southern California*, which included data from 2002 through August 2009, attached to the TU MSHCP.

Field assessments of the site were also conducted by the Condor Panel and Dudek biologists on several occasions in 2007. Specifically, Bloom Biological, Inc. (Bloom Biological), assisted by Dudek, conducted surveys for California condor during the late summer and fall of 2007. Three monitoring stations (observation points) were established within the TMV Planning Area in late July 2007 to search for and, if observed, identify numbers of California condors flying or foraging over the site (see Figure D.1-7 of the appendix). Each observation point was attended by a single field monitor from Bloom Biological or Dudek. Field monitors were experienced in or otherwise qualified for identifying condors and other raptor species. Monitoring began on August 13 and was completed on November 17, 2007. Each observation point was staffed 8 hours per day, 5 days per week (Monday through Friday), for the duration of the monitoring effort.

Most of the condors in the wild were bred in captivity and outfitted with radio transmitters prior to release. All field monitors periodically scanned for radio signals (each wild condor has a unique assigned radio frequency) using three-element Yagi antennas and attached radio transceivers (Communications Specialists, Inc., Model R-1000, with a range of approximately 60 mi.). Data collected for condors detected by radio signal and/or visual observation included date and time of detection, the frequency identification code and, if on site, the approximate location of the detection or observation of the condor. Other data that was collected included weather conditions, USFWS patagial wing identification number (if visible), length of observation, behavior (e.g., foraging, perching), and estimated altitude. The location of each on-site detection or observation was noted on a USGS topographic map. Observations of other raptors were also documented. Visual and radio monitoring of condors (primarily of those wearing VHF transmitters) on Tejon Ranch, primarily within the TMV Planning Area, has continued on a daily basis (weather permitting) since August 2008.



SOURCES: Bloom Biological 2008. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

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Condor Survey Observation Stations

FIGURE D.1-7

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1.5.2 OTHER SPECIES-SPECIFIC BIRD SURVEYS

Surveys were conducted within the TMV Planning Area for other special-status bird species that are not Federally or state listed. In general, these special-status species are either CSC- or BCC-designated birds, or Fully Protected species. Surveys for these birds are described below and include the following: riparian birds; marsh-nesting birds; burrowing owl (*Athene cunicularia*); California spotted owl; northern goshawk; Fully Protected raptors, including golden eagle and white-tailed kite (*Elanus leucurus*); and purple martin. In addition, a winter bird survey was conducted that included golden eagle.

Riparian Birds

During focused surveys for Federally and/or state-listed riparian birds (see Section 1.5.1 of this appendix), biologists also surveyed for other special-status birds that could occur within riparian habitat, including the yellow warbler (*Dendroica petechia*).

Aquatic and Marsh-Nesting Birds

A focused survey for these species, including tricolored blackbird (*Agelius tricolor*), was conducted on the margins of Castac Lake and Grapevine Creek to determine if aquatic and marsh-dwelling special-status birds breed on site or in areas directly adjacent to the TMV Planning Area. No official method has been established for conducting surveys for aquatic and marsh-dwelling bird species.

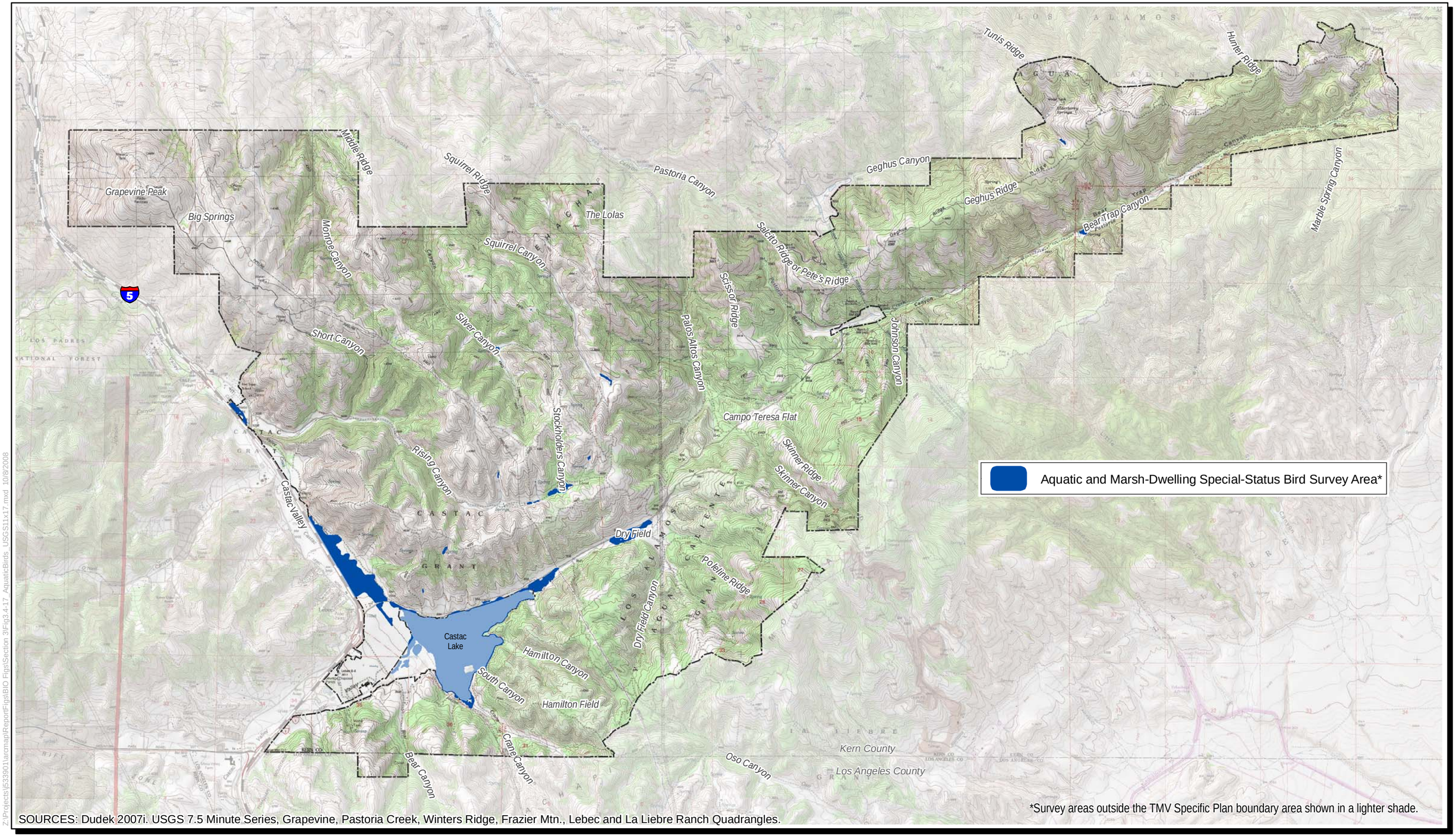
The surveys were conducted throughout the breeding season in May and June of 2007 and included approximately 560 ac. of suitable meadow and marsh habitat within the TMV Planning Area, including areas around Castac Lake (see Figure D.1-8 of this appendix).

The survey area was observed from several vantage points with binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification). Observers spent approximately 20 minutes at each location to scan for target birds. Biologists also walked through or adjacent to suitable habitat searching for the species during periods of non-inclement weather. Standard survey information was recorded, including survey conditions, survey routes, and results (see Table D.1-7). All observed special-status bird species were recorded and mapped on 1 in. = 400 ft aerial photographs of the site, and notes were recorded regarding observed breeding status.

Table D.1-7. Aquatic and Marsh-Dwelling Special-Status Bird Survey Schedule and Condition

Date	Personnel	Time	Air Temp. (°F)	Wind Speed (mph)	Cloud Cover (%)
Round 1					
05/22/07	SMD	1130–2030	69–85	0–3	5
05/23/07	SMD	0630–2030	68–90	0–5	0
05/24/07	SMD	0900–1930	76–86	0–3	0
Round 2					
06/11/07	SMD	0730–2030	71–78	0–6	2–3
06/12/07	SMD	0800–1830	72–91	0–10	0–3
06/19/07	TAC	0915–1800	65–75	5–15	0
06/20/07	TAC	0900–1800	65–75	0	0

Personnel key:
SMD: Scott Duff; TAC: Traci Caddy.



SOURCES: Dudek 2007i. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Aquatic and Marsh-Dwelling Special-Status Bird Survey Areas

FIGURE D.1-8

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Burrowing Owl

Surveys for the burrowing owl conformed to the protocols described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). See Table D.1-8. Surveys were conducted within suitable habitat composed primarily of non-native and native grasslands within the site (see Figure D.1-9). Biologists walked approximate 100 ft transects throughout suitable habitat and assessed whether each potential burrow that was observed exhibited evidence of burrowing owl (i.e., feathers, whitewash, pellets, insect remains, tracks). The locations of potential burrows were recorded on a map with survey results, including evidence of occupation (e.g., feathers, pellets, tracks, and prey remains), the presence of ground squirrels (e.g., active latrines, recent digging), or evidence of lack of use (e.g., entrance full of debris, soil, or the presence of spider webs). Burrows with evidence of potential burrowing owl use were surveyed again at the time of day recommended in the CDFG protocols. Owls observed during these additional surveys, if any, were recorded and mapped.

Table D.1-8. Burrowing Owl Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
04/23/07	SMD, TSL	1800–2000	43–53	0–6	0
05/01/07	RMK	1130–1750	74–79	5–10	10
05/02/07	RMK	0815–1600	72–78	15–25	40
05/08/07	SMD	1500–2030	90	0–5	0
05/09/07	SMD	0830–1430	90	0–3	0
05/09/07	SMD	1600–2030	95	5–10	0
05/10/07	RMK	1800–1940	70–75	10–20	0
05/11/07	RMK	1000–1830	63–76	10–15	0
05/12/07	RMK	0830–1300	64–77	8–17	5
05/16/07	SMD	1030–2000	85	0–5	0
05/16/07	RMK	1045–1700	75–85	5–15	0
06/13/07	RMK	1420–1620	82	5–15	0
06/19/07	RMK	1700–1900	78–84	5–10	0
06/20/07	RMK	0900–1735	77–82	2–8	0
06/21/07	RMK	0925–1630	78–83	5–20	0
06/22/07	RMK	0900–1250	78–82	2–5	2
06/26/07	RMK	0910–1130	77–82	3–5	0
06/26/07	RMK	1250–1800	77–82	3–5	0
06/27/07	RMK, TSL	0830–1430	77–81	2–10	0

Personnel key: SMD: Scott Duff; RMK: Rebekah Krebs; TSL: Thomas Liddicoat.

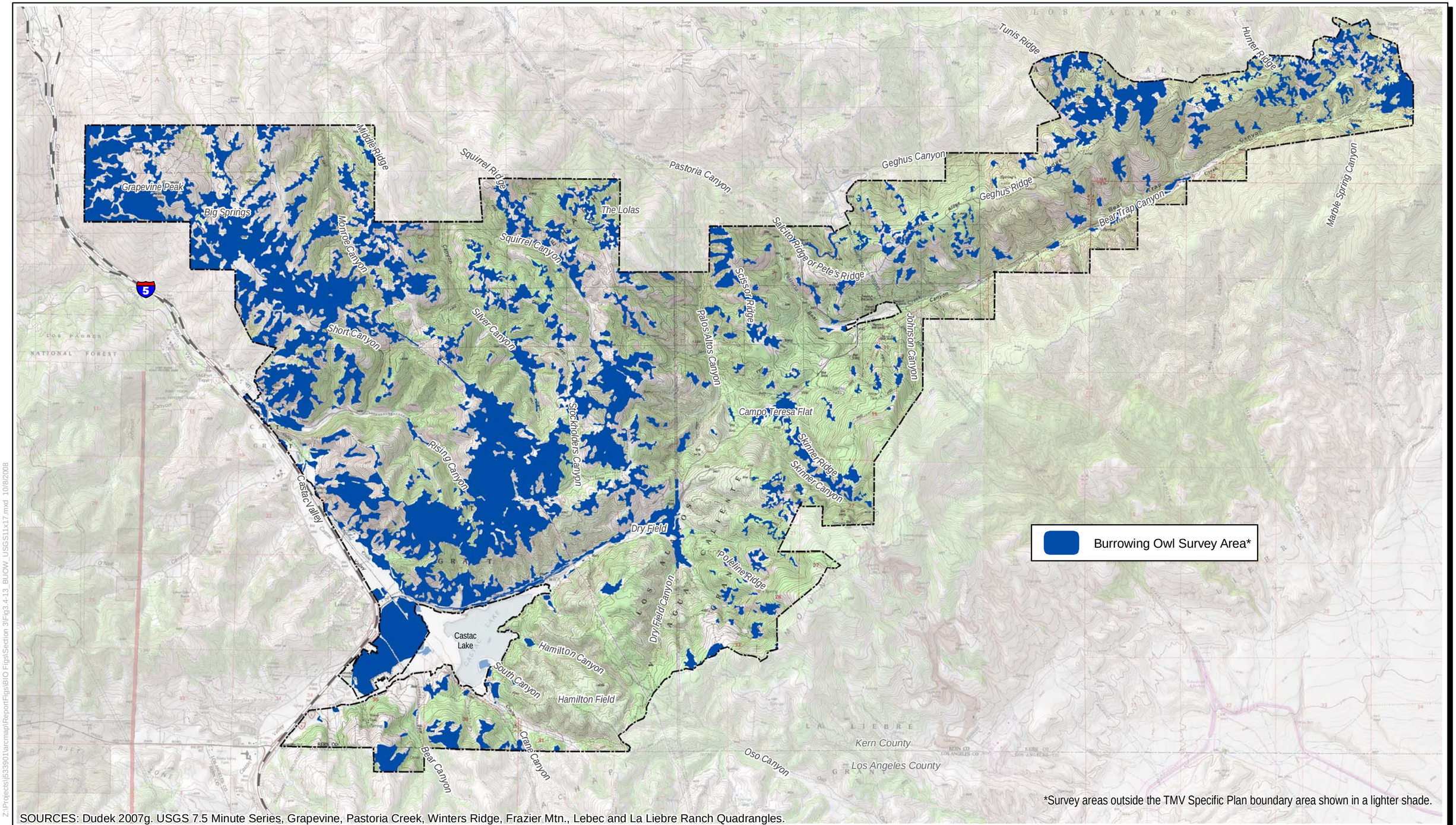
California Spotted Owl

Surveys for the California spotted owl were conducted by BioResource Consultants (2008) in accordance with the survey protocol developed by the United States Forest Service (USFS) (USFS 1993) within approximately 2,240 ac. of suitable California spotted owl habitat on site.

Initial site visits were conducted on March 29 and April 9, 2007. During the March 29 visit, suitable habitat patches and likely locations for calling stations were recorded on USGS topographic maps and with a handheld GPS unit (Magellan eXplorist 210, generally accurate to approximately 3 m). The visit on April 9 included follow-up visits to the selected calling stations, and trial nighttime calling surveys were conducted. A total of 40 transects and/or calling points were established to adequately cover all suitable spotted owl habitat within the area. Calling stations were spaced approximately .25 to .5 mi. apart depending on perceived sound attenuation due to topography and ambient noise.

Based on the initial results, surveys were conducted at night from sunset to sunrise during May, June, July, and August 2007 and included calling from each of the 40 calling stations. Calling was conducted either by imitating spotted owl vocalizations or by playing a tape of owl calls. Each calling station was visited a total of six times. Calls were played for three to seven calls and played again after a pause of 1 to 2 minutes. A surveyor remained at each calling station for 10 minutes. During each nighttime survey, 6 to 15 of the calling stations were visited depending on the distance between the stations. For each survey visit, recorded information included general survey conditions, the survey route, start and stop times, and the survey results. Surveys were not conducted during periods of inclement weather. Visits were spaced at least 5 days apart and at least four of the visits were conducted before June 30.

A daytime follow-up reproductive survey was conducted to verify whether spotted owls detected at night were nesting and/or fledging young. This phase of the survey was accomplished by locating a detected owl, offering the owl mice, and following the owl to determine whether the owl consumed the mouse, delivered the mouse to a nest, or fed the mouse to a fledgling. Reproductive surveys were conducted as soon as possible, generally 2 to 8 days following a positive night response detection. The reproductive surveys were performed a minimum of four times at each location with a positive owl response or until reproductive status of the owl could be confirmed.



*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: Dudek 2007g. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Burrowing Owl Survey Areas

FIGURE D.1-9

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Table D.1-9 lists the dates and times of the spotted owl surveys, and the survey area is shown in Figure D.1-10 of this appendix.

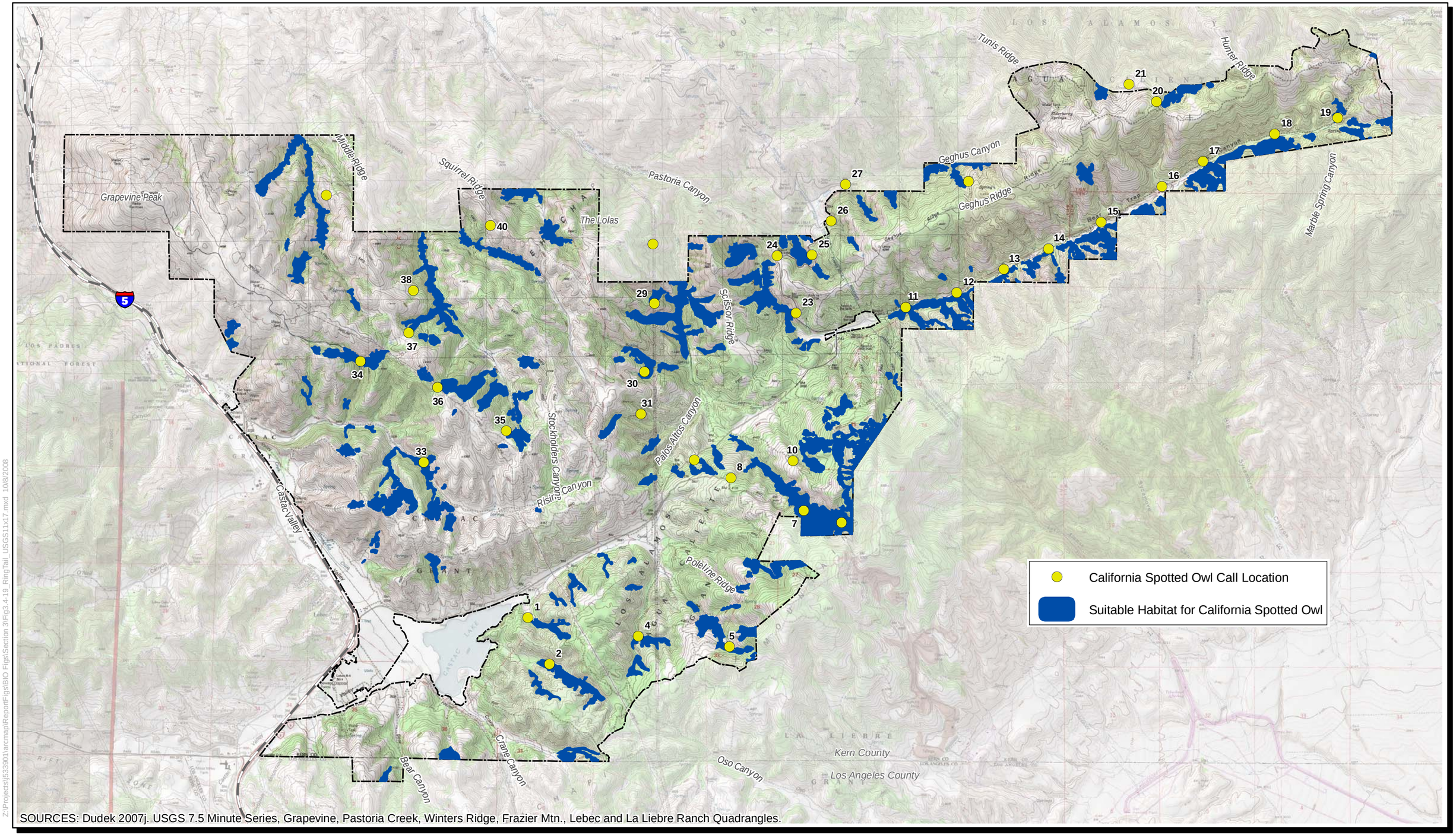
Table D.1-9. California Spotted Owl Survey Schedule and Conditions

Date	Type of Survey	Visit number	Personnel	Time	Temp. (°F)	Wind (mph)	Weather	Moon Phase
04/17/07	Presence/absence	1	VAP, SMW	1940–1238	60	0–8	No precipitation	—
04/19/07 to 04/20/07	Presence/absence	1	VAP, SMW	1943–0151	40–50	0–3	No precipitation	—
04/24/07 to 04/25/07	Presence/absence	1	VAP, SMW	1954–0105	50–55	1–3	No precipitation	—
04/25/07	Presence/absence	1	VAP, SMW	1940–1103	55	10	No precipitation	—
05/08/07 to 05/09/07	Presence/absence	2	VAP, SMW	1945–0141	60–65	0–2	No precipitation	Half moon - 2 days
05/9/07	Presence/absence	2	VAP, SMW	2035–2357	60–65	2–5	No precipitation	Half moon - 1 day
05/10/07 to 05/11/07	Presence/absence	2	VAP, SMW	1951–0119	45–70	1–2	No precipitation	Half moon
05/17/07	Reproductive survey	1	VAP, SMW	0453–0505	65	0	No precipitation	New moon + 1 day
05/22/07 to 05/23/07	Presence/absence	3	VAP, SMW	2008–0044	55–90	1–10	No precipitation	Half moon - 1 day
05/23/07	Presence/absence	3	VAP, SMW	2018–2254	50–70	1–5	No precipitation	Half moon
05/24/07	Reproductive survey	1	VAP, SMW	0450–0520	65	0	No precipitation	Half moon + 1 day
05/24/07 to 05/25/07	Presence/absence	3	VAP, SMW	2001–0046	55–70	0–8	No precipitation	Half moon + 1 day
06/13/07	Presence/absence	4	VAP, SMW	2012–2348	60–65	0–5	No precipitation	New moon - 2 days
06/14/07	Presence/absence	4	VAP, SMW	2120–2216	60–70	0–3	No precipitation	—
06/14/07	Reproductive survey	1	VAP, SMW	1949–2341	65–70	0–3	No precipitation	New moon - 1 day

Table D.1-9 (Continued)

Date	Type of Survey	Visit number	Personnel	Time	Temp. (°F)	Wind (mph)	Weather	Moon Phase
06/18/07 to 06/19/07	Presence/absence	4	VAP, SMW	2007–0007	65	0–5	No precipitation	New moon + 3 days
06/19/07	Presence/absence	4	VAP, SMW	2142–2323	65	0–1	No precipitation	Half moon - 3 days
06/20/07	Reproductive survey	2	VAP, SMW	0620–0600	65	0	No precipitation	Half moon - 2 days
07/11/07 to 07/12/07	Presence/absence	5	VAP, SMW	2028–0030	60–65	0–8	No precipitation	—
07/12/07 to 07/13/07	Presence/absence	5	VAP, SMW	2038–0309	60–65	0–10	No precipitation	—
07/19–07/20/07	Reproductive survey	2	VAP, SMW	—	65	0	No precipitation	New moon + 4 days
07/19–07/20/07	Reproductive survey	2	VAP, SMW	2015–2130	65	5	No precipitation	New moon + 4 days
07/24/07	Presence/absence	6	VAP, SMW	2042–2345	60–70	0–3	No precipitation	—
07/31/07	Presence/absence	6	VAP, SMW	2010–2243	65	0–3	No precipitation	—
08/1/07	Presence/absence	6	VAP, SMW	2004–1214	65–70	0–3	No precipitation	—
08/06–08/08/07	Reproductive survey	3	VAP, SMW	—	65	0	No precipitation	Half moon
08/06–08/08/07	Reproductive survey	3	VAP, SMW	—	65	0	No precipitation	Half moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	—	65	0	No precipitation	New moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	1915–2126	75	0	No precipitation	New moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	1951–2055	70	0	No precipitation	New moon

Personnel key:
SMW: Scott M. Werner; VAP: Veronica A. Pedro.



SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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California Spotted Owl Survey Areas

FIGURE D.1-10

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Nesting Golden Eagle/White-Tailed Kite

Surveys for nesting golden eagles and white-tailed kites within the TMV Planning Area were conducted in conjunction with general nesting raptor surveys. The surveys used methods described by Fuller and Mosher (1987), including (1) early season driving and road surveys to identify nest locations and (2) follow-up driving, road, or pedestrian surveys to identify additional locations and provide nesting success information.

The surveys focused on oak woodland habitats (see Figure D.1-11 of this appendix). Observations were also recorded during other surveys (i.e., riparian bird, marsh bird, and burrowing owl surveys described above). Chaparral habitats were surveyed by road to supplement the oak woodland surveys.

The first survey was conducted early in the nesting period (see Table D.1-10). Surveys were conducted from March 6 through March 30, 2007. Surveys were conducted by Dudek biologists Anita Hayworth, Brock Ortega, Brianna Wood, F. Marcus Obregon, Keith Babcock, Paul Lemons, Rebekah Krebs, Stuart Fraser, Scott Boczkiewicz, Scott Duff, Traci Caddy, and Thomas Liddicoat. In general, most deciduous trees had not leafed out so nests, including golden eagle nests, were very visible during this period. A second set of surveys were conducted during June 4 through July 6, 2007 (see Table D.1-10).

Table D.1-10. Golden Eagle/White-Tailed Kite Survey Schedule and Conditions

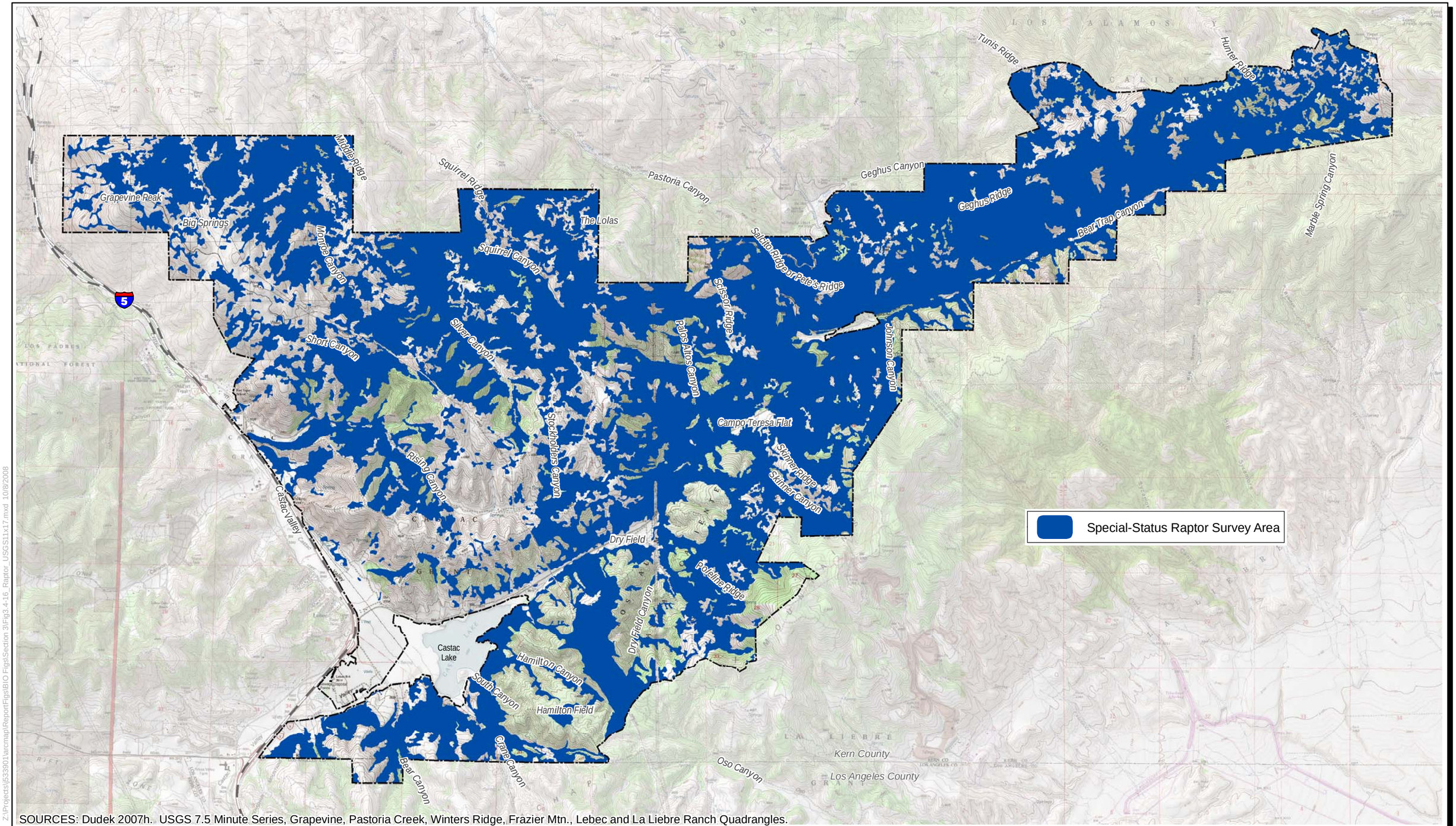
Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
Spring Survey					
03/06/07	SMB, SFF	0845–1700	48	0–3	0
03/07/07	SFF, SMB	0730–1815	46	Not recorded	0
03/08/07	SMB, SFF	0645–1800	58–60	3–5	0
03/12/07	TAC, RMK	0830–1800	58–72	0–4	0
03/13/07	AMH, BMW	0700–1720	42–65	0–3	0
03/13/07	TAC, RMK	0805–1800	55	0–3	0
03/14/07	RMK, TAC	0940–1745	55–63	0–4	0
03/15/07	RMK, TAC	0930–1600	55–62	1–3	0
03/16/07	RMK, TAC	0845–2245	56–58	5–15	0
03/19/07	BAO, RMK	0930–1730	55–65	0–3	0
03/19/07	KWB, KJM	0945–1815	50–60	10–15	0
03/22/07	RMK, TAC	1000–1700	45–68	0–3	0
03/23/07	RMK, TAC	1010–1300	48–70	0–3	0
03/26/07	TAC, RMK	0930–1515	48–68	0–5	0
03/28/07	RMK, TAC	1530–1800	40	5–20	50
03/29/07	SMD, PML	0800–1630	69	1–4	0
03/29/07	TAC, RMK	1430–1710	45–50	Not recorded	0
03/30/07	PML, SMD	0745–1230	48–65	0–5	0
Summer Survey					
06/04/07	TAC	0830–1715	5–80	Not recorded	0
06/05/07	TAC	0930–1700	65–70	5–15	0
06/06/07	TAC	0700–1700	55–65	5–15	0
06/06/07	RMK	0910–1700	65–72	5–20	95

Table D.1-10 (Continued)

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
06/07/07	TAC	0700–1700	70–75	1–3	0
06/07/07	RMK	0830–1630	73–78	2–8	0
06/12/07	RMK	1200–1925	76–85	3–5	0
06/13/07	RMK	1420–1620	82	5–15	0
06/14/07	RMK	0855–1750	73–84	2–10	0
06/15/07	RMK	0900–1200	75–85	0–5	0
06/21/07	RMK	0925–1630	78–83	5–20	0
06/26/07	RMK	0910–1130	77–82	3–5	0
06/27/07	RMK, TSL	0830–1430	77–81	2–10	0
06/28/07	RMK, TSL	0840–2045	70–78	3–25	0
06/29/07	RMK, TSL	0820–1120	74	3–5	0
07/05/07	RMK	0900–1900	79–85	2–5	0
07/06/07	RMK, FMO	0825–1915	78–93	0–20	0

Personnel key:

AMH: Anita Hayworth; BAO: Brock Ortega; BMW: Brianna Wood; FMO: F. Marcus Obregon; KJM: Kam Muri; KWB: Keith Babcock; PML: Paul Lemons; RMK: Rebekah Krebs; SFF: Stuart Fraser; SMB: Scott Boczkiewicz; SMD: Scott Duff; TAC: Traci Caddy; TSL: Thomas Liddicoat.



SOURCES: Dudek 2007h. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Special-Status Raptor Survey Areas

FIGURE D.1-11

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Teams of two biologists conducted the spring surveys, and single observers conducted the summer surveys. Stops were made at intervals ranging between 1,000 and 1,500 ft to scan the landscape for raptors or nest locations. Each stop lasted approximately 5 minutes and binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. The interval between stops varied with the size of the applicable habitat patch and the ability to scan the patch based on topography. All areas of woodland vegetation were visited or visually scanned with binoculars. Trees, fence lines, rock outcrops, and ground sites were searched for direct observation or evidence of raptor nesting, including direct observation of a nest or whitewash, feathers, and prey debris. The surveys were conducted during periods without persistent precipitation or fog and when wind speeds were less than 15 mph.

Northern Goshawk

The current survey protocol for the northern goshawk was developed by the USFS (2000). There is no USFWS survey protocol for this species. Although the TMV project site is not within the breeding range of this species, it was recorded for the site and the breeding range is located nearby (Squires and Reynolds 1997). Focused surveys for northern goshawk were conducted by Dudek biologists within suitable habitat on site, including canyon live oak forest typically characterized as montane riparian deciduous forest and mixed hardwood forest. There is very little conifer forest located on site. A total of 2,240 ac. of suitable northern goshawk habitat on site was surveyed (see Figure D.1-12).

Dawn acoustic surveys based on detection of courtship vocalizations and flight displays of goshawks at nest sites were conducted to survey for the species. Listening stations in close proximity to patches of suitable habitat were established, and 1.5-hour listening periods were conducted at dawn or within early morning hours during the early part of the breeding season. The USFS protocol indicates that two surveys are required and a third is recommended if the results of the first two surveys are negative. The surveyor arrived at each listening station 45 minutes before sunrise and remained for a total of 1.5 hours. Dudek biologists conducted the surveys from March through April 2007 in accordance with the USFS protocol (see Table D.1-11).

Table D.1-11. Northern Goshawk Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
03/14/07	TAC, RMK	0715–0940	55–63	0–4	0
03/15/07	TAC, RMK	0815–0930	55–62	1–3	0
03/16/07	TAC, RMK	0800–0842	56–58	5–15	0
03/19/07	BAO, RMK	0800–0930	55–65	0–3	0
03/20/07	BAO, RMK	0751–0940	41–55	NR	100
03/22/07	TAC, RMK	0745–1000	45–68	0–3	0
03/23/07	TAC, RMK	0850–1010	48–70	0–5	0
03/26/07	TAC, RMK	0850–0929	48–68	0–5	0

Table D.1-11 (Continued)

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
03/27/07	TAC, RMK	0910–0920	35	NR	0
03/28/07	TAC, RMK	0826–0946	40	10–15	0
04/04/07	RMK, TSL	0742–1100	60	0–1	100
04/11/07	TAC	0745–0940	55–60	0–5	0
04/13/07	TAC	0750–0904	55–60	NR	0
04/17/07	TAC	0818–0907	50–55	NR	0
04/18/07	TAC	0900–0950	30–35	5–15	100
04/19/07	TAC	0819–1000	50–55	NR	0

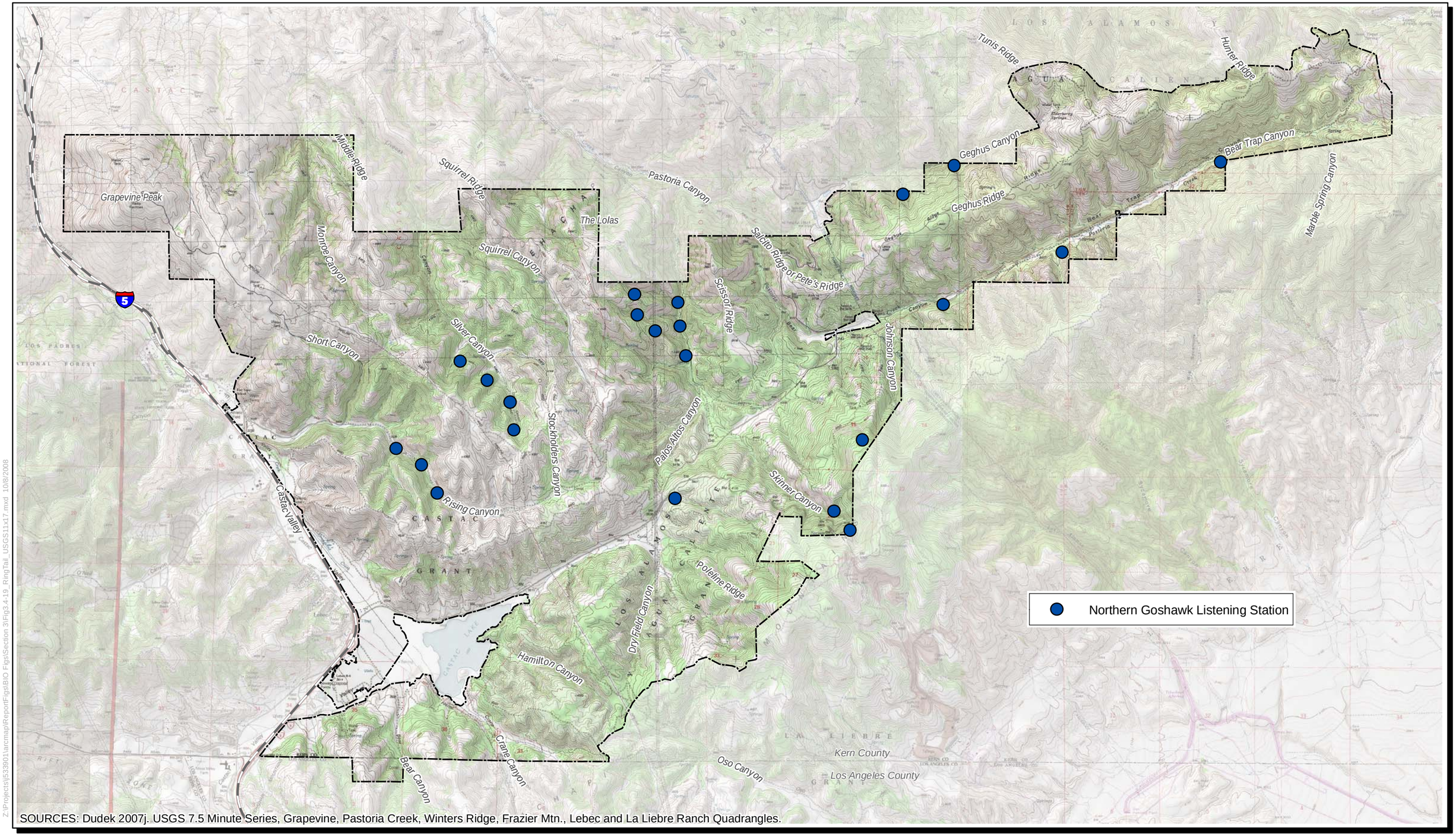
Personnel key:
BAO: Brock Ortega; TAC: Traci Caddy; RMK: Rebekah Krebs; TSL: Thomas Liddicoat.
NR = Not recorded

Purple Martin

There is no established protocol survey methodology for purple martin. Surveys for purple martin were primarily conducted in conjunction with surveys for golden eagle, white-tailed kite, and northern goshawk, as described above, because purple martins nest in similar habitats and would be observed during the period the nesting raptors surveys were conducted. Purple martins may also use riparian habitat, and the focused surveys conducted for riparian bird species described above also would have resulted in detections of purple martin if this species were nesting in on-site riparian habitats. Biologists were attentive to birds in flight and bird calls and surveys were on foot, so overall habitat coverage was very good. In addition, with the raptor surveys, the biologists were searching oak trees for nesting raptors, so nesting activity of other bird species was also noted. Purple martins also tend to nest in colonies or clusters, so several adults entering and emerging from nesting areas (e.g., snags, broken tree tops) are easily detected.

Wintering Birds

Suitable habitat and winter arrival information for wintering bird species was determined by reviewing published literature (Zeiner et al. 1990a; Garrett and Dunn 1981; Poole 2005). The areas determined to be suitable habitat for special-status wintering birds are identified in Figure D.1-13 of this appendix. Note that wintering bald eagle surveys are addressed separately above.



SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Northern Goshawk Listening Stations

FIGURE D.1-12

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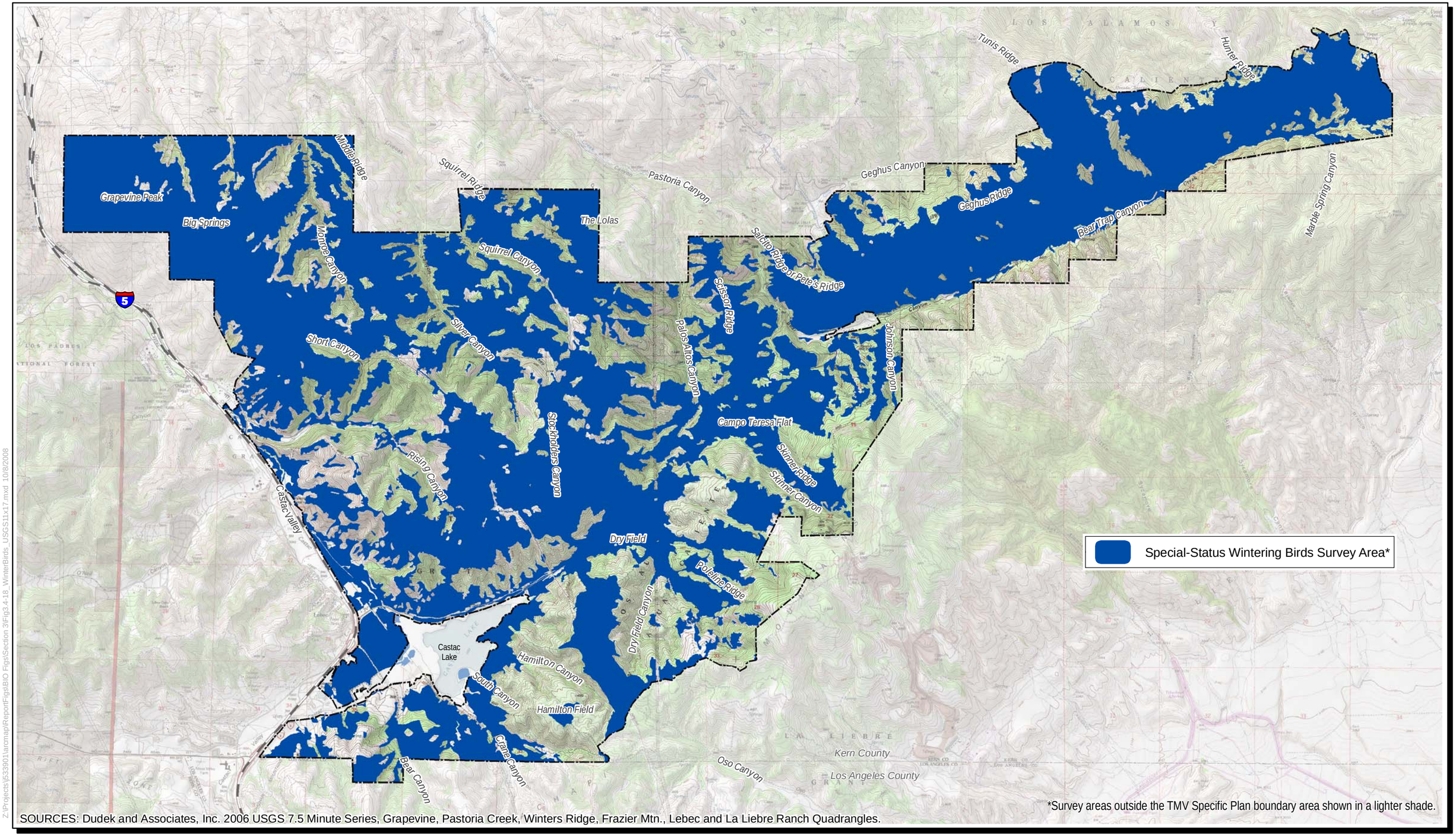

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: Dudek and Associates, Inc. 2006 USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

0 5,000 Feet

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Tehachapi Upland MSHCP

Special-Status Wintering Bird Survey Areas

FIGURE D.1-13

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Wintering bird surveys were conducted during November 14 to 16, 2006. Teams of two surveyors conducted road/driving surveys according to accepted methods (Ethier n.d.). All roads that pass through or near the suitable habitat for these species were traversed at approximately 10 mph and no faster than 25 mph. The route traveled was recorded, and at intervals of approximately 1,000 to 1,500 ft, the surveyors stopped to search for special-status species. The stops generally lasted for approximately 5 minutes, and binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. The survey schedule and conditions are summarized in Table D.1-12.

Table D.1-12. Wintering Bird Survey Schedule

Date	Personnel	Time	Air Temp. (°F)	Wind (mph)	Cloud Cover (%)
11/14/06	RMK, JDP	1000–1517	57–59	2–5	0
11/14/06	KJM, PML	1000–1700	51–55	5–10	10–100
11/14/06	BAO, SLT	1015–1700	51–55	3–5	100
11/15/06	BAO, SLT	0730–1300	50–65	0–1	0
11/15/06	RMK, JDP	0730–1700	57–59	1–5	2–5
11/15/06	KJM, SFF	0745–1700	57–58	2–5	0
11/15/06	TSL, PML	0800–1715	58–62	5–10	2
11/16/06	TSL, PML	0745–1200	58–73	0–2	5
11/16/06	RMK, JDP	0815–1710	53–58	3–4	0
11/16/06	KJM, SFF	0830–1200	58–73	1–3	0–5

Personnel key:
RMK: Rebekah Krebs; JDP: Jeff Priest; KJM: Kam Muri; PML: Paul Lemons; BAO: Brock Ortega; SLT: Sara Townsend; SFF: Stuart Fraser; TSL: Thomas Liddicoat.

1.6 SPECIAL-STATUS MAMMALS

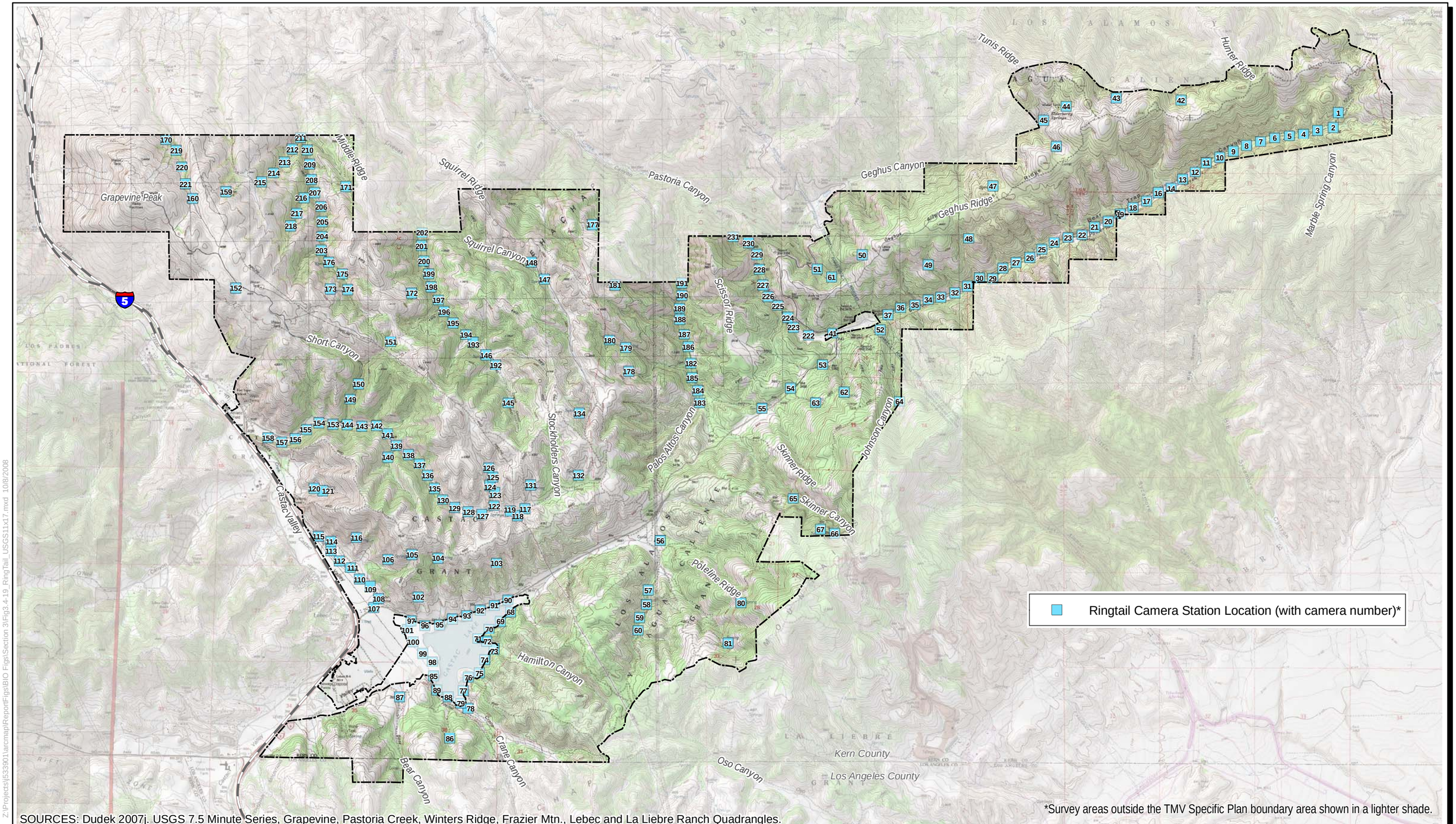
1.6.1 RINGTAIL

Survey Methods

There is no established protocol for conducting ringtail (*Bassariscus astutus*) surveys. A survey protocol was developed based on a review of applicable survey methods and literature related to the habitat preferences, behavior, survey methods, and trapping methods, including Zielinski et al. (2000, 2005), Harris and Ogan (1997), Jaeger (1961), Hawbaker (1974), Halfpenny (1986), Jameson and Peeters (1988), Chapman and Feldhamer (1982), Belluomini (1980), Trapp (1972), Taylor (1954), Howard (1957), Kavanau (1971), Lindstedt et al. (1986), Campbell (2004), and Orloff (1980).

This review indicated that baited analog cameras and sooted plates located within suitable habitat was the most effective method for detecting the presence of the ringtail within a landscape. Camera stations were placed along perennial or longer-lasting intermittent streams, other permanent water sources (e.g., cattle guzzlers, springs), and Castac Lake, at approximate 0.25 km intervals (820 ft) and at the distal ends of linear water courses and adjacent to springs or other point source water sources throughout the TMV Planning Area (Figure D.1-14 of this

appendix). Where multiple point sources (e.g., cattle guzzlers or springs) occurred near each other (not more than 0.25 km from each other), a single camera station was placed near the center of these locations. Camera stations included one digital Cuddeback camera with a 512 Mb CompactFlash card and an opposing bait station. Camera stations were set between 3 and 5 ft off the ground and between 10 and 20 ft from the lure station. The field of view of the camera was situated such that the ground and bait station were both visible. In most instances, both the camera and the bait stations were affixed to the trunks of trees. Where it was not possible to set bait stations or cameras on trees, they were affixed to a survey stake. Cameras were affixed to the tree or stake by 4 in. stainless steel screws. Bait stations were affixed to trees or stakes by inserting 3 in. stainless steel screws through metal framing nail plates. Each station was baited with a combination of raw chicken thighs, whole sardines, and the commercial lure, Gusto (Minnesota Trapline Products, Pennock, Minnesota). Bait was placed within wire mesh baskets that allowed wildlife to eventually remove the bait, but delayed removal long enough for the animal to be captured on camera. Camera sensors were generally directed away from the direction of solar travel to minimize glare and inadvertent triggering of the camera. Bait and camera batteries were reapplied and replaced on the first and eighth day of the camera trapping session. A 3-minute delay was set between triggering photos to preserve battery life and memory space. Cameras were maintained in place for a period of 16 consecutive days.



SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Ringtail Camera Station Locations

FIGURE D.1-14

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The cameras were deployed in 14 sessions at approximately 220 camera stations throughout the TMV Planning Area. Approximately 18 camera stations were used for each of the 14 camera sessions. Every 16 days over a 9-month period, the 18 cameras were rotated from the current session locations to the next location. The survey began in February 2007 and was completed in November 2007 (see Table D.1-13).

Table D.1-13. Ringtail Survey Session Schedule

Session Number	Date	Event	Personnel
1	03/12/07	Set up camera	BAO
1	03/20/07	Battery check/download	TAC
1	03/28/07	Remove camera	TAC
2	03/29/07	Set up camera	TAC
2	04/06/07	Battery check/download	PCS
2	04/14/07	Remove camera	TAC
3	04/15/07	Set up camera	TAC
3	04/23/07	Battery check/download	PML
3	05/01/07	Remove camera	PML
4	05/02/07	Set up camera	PML
4	05/10/07	Battery check/download	SMD
4	05/18/07	Remove camera	SMD
5	05/19/07	Set up camera	SMD
5	05/27/07	Battery check/download	RMK
5	06/04/07	Remove camera	RMK
6	06/05/07	Set up camera	RMK
6	06/13/07	Battery check/download	TSL
6	06/21/07	Remove camera	TSL
7	06/22/07	Set up camera	TSL
7	06/30/07	Battery check/download	TAC
7	070/8/07	Remove camera	TAC
8	07/09/07	Set up camera	TAC
8	07/17/07	Battery check/download	TSL
8	07/25/07	Remove camera	TSL
9	07/26/07	Set up camera	TSL
9	08/03/07	Battery check/download	TSL
9	08/11/07	Remove camera	TSL
10	08/12/07	Set up camera	TSL
10	08/20/07	Battery check/download	JDP
10	08/28/07	Remove camera	JDP
11	08/29/07	Set up camera	JDP
11	09/06/07	Battery check/download	TLW
11	09/14/07	Remove camera	TLW
12	09/15/07	Set up camera	TLW
12	09/23/07	Battery check/download	PML
12	10/01/07	Remove camera	PML
13	10/02/07	Set up camera	PML
13	10/10/07	Battery check/download	PCS
13	10/18/07	Remove camera	PCS
14	10/19/07	Set up camera	PCS
14	10/27/07	Battery check/download	TAC
14	11/03/07	Remove camera	TAC

Personnel key:
BAO: Brock Ortega; JDP: Jeff Priest; PCS: Patricia Schuyler; PML: Paul Lemons; RMK: Rebekah Krebs; SMD: Scott Duff; TSL: Thomas Liddicoat; TAC: Traci Caddy; TLW: Tricia Wotipka.

1.6.2 SPECIAL-STATUS SMALL MAMMALS

Focused small mammal trapping was conducted by Compliance Biology in 2003 over an approximately 4,500 ac. portion of the TMV Planning Area (Compliance Biology 2003) and at additional locations in 2007 (J&S 2008a). The surveys were conducted within suitable habitats for the species (e.g., chaparral and sagebrush habitats at lower elevations and open pine forests at higher elevations for Tehachapi pocket mouse).

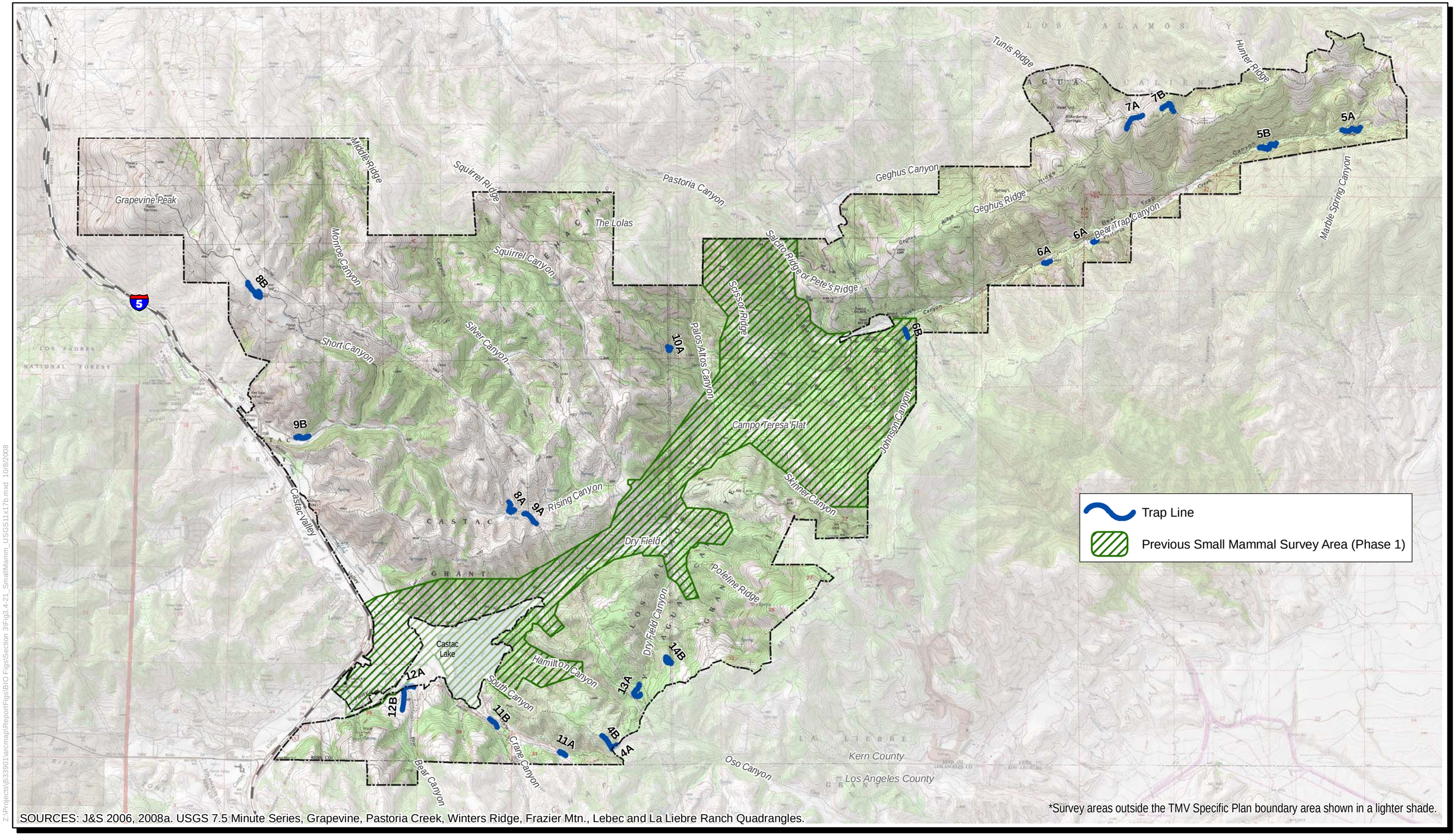
Survey Methods

Prior to conducting field studies, relevant literature resources were reviewed, including the results of prior small mammal surveys conducted within the TMV Planning Area.

Following the literature reviews, a reconnaissance-level survey to select trapline transects was completed on May 16 and May 17, 2007. Trapline locations were selected to sample the representative vegetation communities in the survey area. The target species generally inhabit more xeric habitats and a majority of the traplines were located in the drier southern portion of the study area where such habitats occur (see Figure D.1-15 of this appendix).

Small Mammal Survey Methodology

Table D.1-14 summarizes the dates and conditions when small mammal surveys were conducted during July and August 2007. Figure D.1-15 shows special-status small mammal survey locations. Fifty 9 in. long aluminum folding Sherman traps were placed along each trapline at approximately 10 to 15 m intervals. The traps were set and placed where small rodent captures were judged to be most probable on the basis of burrows, droppings, trails, and other signs of occupancy. Where rodent sign was not apparent, traps were placed near the base of shrubs or near downed woody material. The location of each trap was recorded using a Garmin eTrex handheld GPS unit (accurate to approximately 3 m). The GPS data were downloaded and imported into GIS. A mixture of birdseed and dried ferret food was used as bait. A small handful of the bait was placed inside the trap with a few seeds trailing out from the mouth of the trap, usually toward a game trail, burrow, or open area. All traps were modified with the addition of a binder clip on the lip of the trap body to prevent the doors from closing on the animals' tails. Each trapline was run for four consecutive nights. The traps were set and baited in late afternoon, left open all night, and checked and closed at dawn. The time and weather conditions were noted at the beginning and end of each trapline check. The sex and reproductive condition of each animal was recorded (i.e., testes scrotal or not scrotal, female reproductive or non-reproductive). Representative digital photos were taken of all species captured on each trapline. Once the data were recorded onto data sheets, each animal was released where it had been captured. Released animals were observed until they moved to the safety of a burrow or clump of vegetation. Table D.1-15 lists small mammal survey biologists.



SOURCES: J&S 2006, 2008a. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Special-Status Small Mammal Survey Locations

FIGURE D.1-15

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Table D.1-14. Locations, Survey Date and Time, and Weather Conditions for Small Mammal Surveys

Trap Line	Date and Time	Weather Conditions
7A	06/12/07, 0415–0441	53°F, winds 2–7 mph, clear skies
7B	06/12/07, 0450–0528	53°F, calm, clear skies
5A	06/12/07, 0553–0631	62°F, winds 1–2 mph, clear skies
5B	06/12/07, 0645–0658	55°F, winds 0–2 mph, clear skies
7A	06/13/07, 0415–0436	60°F, winds 4–7mph, clear skies
7B	06/13/07, 0452–0513	60°F, winds 1–4 mph, clear skies
5A	06/13/07, 0538–0610	58.5°F, winds 1–2 mph, clear skies
5B	06/13/07, 0623–0640	58°F, winds 1–3 mph, clear skies
7A	06/14/07, 0410–0440	63°F, winds 4–10 mph, clear skies
7B	06/14/07, 0445–0515	66°F, winds 1–4 mph, clear skies
5A	06/14/07, 0538–0606	57°F, winds 0–2 mph, clear skies
5B	06/14/07, 0622–0635	58°F, calm, clear skies
7A	06/15/07, 0410–0450	66°F, winds 5–10 mph, clear skies
7B	06/15/07, 0505–0540	65°F, winds 1–5 mph, clear skies
5A	06/15/07, 0604–0643	60.5°F, calm, clear skies
5B	06/15/07, 0659–0722	62°F, calm, clear skies
1A	6/26/07	63 F, winds 10-14 mph, clear skies
1B	6/26/07	63 F, winds 10-14 mph, clear skies
2A	6/26/07	62.5 F, winds 5-9 mph, clear skies
2B	6/26/07	63 F, winds 3-12 mph, clear skies
1A	6/27/07	61 F, winds 7-14 mph, clear skies
1B	6/27/07	61 F, winds 5-14 mph, clear skies
2A	6/27/07	64 F, winds 1-8 mph, clear skies
2B	6/27/07	61 F, winds 5-14 mph, clear skies
1A	6/28/07	57 F, winds 10-25 mph, clear skies
1B	6/28/07	57 F, winds 15-25 mph, clear skies
2A	6/28/07	60 F, winds 5-15 mph, clear skies
2B	6/28/07	58 F, winds 10-20 mph, clear skies
1A	6/29/07	56 F, winds 10-25 mph, clear skies
1B	6/29/07	56 F, winds 8-15 mph, clear skies
2A	6/29/07	59 F, winds 8-12 mph, clear skies
2B	6/29/07	55 F, winds 5-17 mph, clear skies
10A	07/10/07, 0400–0438	71°F, winds 1 mph, cloudy
6A	07/10/07, 0515–0540	62°F, calm, partly cloudy
6B	07/10/07, 0550–0615	67°F, calm, partly cloudy
10A	07/11/07, 0352–0428	67°F, winds 1 mph, clear skies
6A	07/11/07, 0510–0538	58°F, winds 2 mph, clear skies
6B	07/11/07, 0548–0620	63°F, calm, clear skies
10A	07/12/07, 0341–0418	66°F, winds 1.5 mph, clear skies
6A	07/12/07, 0452–0522	54°F, winds 2 mph, clear skies
6B	07/12/07, 0533–0558	51°F, winds 1.5 mph, clear skies
10A	07/13/07, 0350–0449	60°F, winds 1.5 mph, clear skies

Table D.1-14 (Continued)

Trap Line	Date and Time	Weather Conditions
6A	07/13/07, 0521–0612	54°F, winds 1 mph, clear skies
6B	07/13/07, 0622–0702	55°F, winds 2 mph, clear skies
3A	07/17/07	58 F, winds 6-7 mph, clear skies
3B	07/17/07	59 F, winds 6 mph, clear skies
4A	07/17/07, 0543–0607	59°F, winds 1 mph, clear skies
4B	07/17/07, 0608–0630	61°F, winds 0.5 mph, clear skies
3A	07/18/07	60 F, winds 5-8 mph, clear skies
3B	07/18/07	60 F, winds 3-5 mph, clear skies
4A	07/18/07, 0529–0547	53°F, winds 1.5 mph, clear skies
4B	07/18/07, 0550–0615	57°F, winds 0.5 mph, clear skies
3A	07/19/07	58 F, winds 5 mph, cloudy
3B	07/19/07	58.5 F, winds 5 mph, cloudy
4A	07/19/07, 0540–0600	54°F, winds 1.5 mph, cloudy
4B	07/19/07, 0516–0540	55°F, winds 1.5 mph, cloudy
3A	07/20/07	61 F, winds 2-5 mph, clear skies
3B	07/20/07	57 F, winds 2-5 mph, clear skies
4A	07/20/07, 0634–0702	56.5°F, winds 0.5 mph, clear skies
4B	07/20/07, 0550–0630	54°F, winds 3–6 mph, clear skies
11A	07/24/07, 0328–0352	67°F, winds 2.5 mph, clear skies
11B	07/24/07, 0400–0418	67°F, winds 2 mph, clear skies
12A	07/24/07, 0427–0508	66°F, winds 0.5 mph, clear skies
12B	07/24/07, 0513–0539	66°F, winds 0.5 mph, clear skies
11A	07/25/07, 0345–0359	71°F, winds 1 mph, clear skies
11B	07/25/07, 0404–0425	64°F, calm, clear skies
12A	07/25/07, 0434–0511	60°F, winds 1 mph, clear skies
12B	07/25/07, 0512–0534	60°F, winds 0.5 mph, clear skies
11A	07/26/07, 0340–0359	59°F, calm, clear skies
11B	07/26/07, 0411–0437	55°F, winds 0.8 mph, clear skies
12A	07/26/07, 0448–0549	54°F, winds 0.3 mph, clear skies
12B	07/26/07, 0550–0615	54°F, calm, clear skies
11A	07/27/07, 0346–0416	61.5°F, winds 1–2.8 mph, clear skies
11B	07/27/07, 0432–0508	58°F, calm, clear skies
12A	07/27/07, 0521–0612	61°F, calm, clear skies
12B	07/27/07, 0615–0656	61°F, calm, clear skies
8A	07/31/07, 0413–0443	66°F , winds 1.5 mph, clear skies
8B	07/31/07, 0502–0537	67°F, winds 0.6 mph, clear skies
9A	07/31/07, 0338–0401	66°F, winds 0.8 mph, clear skies
9B	07/31/07, 0600–0630	64°F, winds 0.8 mph, clear skies
8A	08/01/07, 0420–0450	58°F, winds 3–4 mph, clear skies
8B	08/01/07, 0509–0530	66°F, winds 2–3 mph, clear skies
9A	08/01/07, 0340–0405	59°F, winds 0.9 mph, clear skies
9B	08/01/07, 0546–0632	63°F, wind 0.9–1.6 mph, clear skies
8A	08/02/07, 0420–0450	58°F, winds 1–4 mph, clear skies
8B	08/02/07, 0512–0527	61.3°F, winds 0–1 mph, clear skies

Table D.1-14 (Continued)

Trap Line	Date and Time	Weather Conditions
9A	08/02/07, 0343–0415	59.7°F, winds 0–1 mph, clear skies
9B	08/02/07, 0544–0618	65°F, calm, clear skies
8A	08/03/07, 0440–0518	59°F, winds 1–3 mph, clear skies
8B	08/03/07, 0540–0558	64°F, winds 0–1 mph, clear skies
9A	08/03/07, 0344–0430	63°F, winds 1–3 mph, clear skies
9B	08/03/07, 0612–0718	67°F, winds 1–2 mph, clear skies
13A	08/07/07, 0639–0707	52°F, winds 0–2 mph, clear skies
13B	08/07/07	52.5 F, winds 5-15 mph, clear skies
14A	08/07/07	51.7 F, winds 4-8 mph, clear skies
14B	08/07/07, 0600–0613	52°F, winds 1–3 mph, clear skies
13A	08/08/07, 0710–0727	55.8°F, winds 1–3 mph, clear skies
13B	08/08/07	55 F, winds 9-16 mph, clear skies
14A	08/08/07	53.8 F, winds 6-10 mph, clear skies
14B	08/08/07, 0624–0701	55.9°F, winds 1–2 mph, clear skies
13A	08/09/07, 0655–0714	59.5°F, winds 0–1 mph, clear skies
13B	08/09/07	59.5 F, winds 1-5 mph, clear skies
14A	08/09/07	57.5 F, winds 3-5 mph, clear skies
14B	08/09/07, 0609–0648	57.2°F, winds 0–2 mph, clear skies
13A	08/10/07, 0647–0707	60°F, calm, clear skies
13B	08/10/07	63.7 F, winds 9-12 mph, clear skies
14A	08/10/07	62 F, winds 5-7 mph, clear skies
14B	08/10/07, 0548–0636	63°F, winds 1–3 mph, clear skies

Table D.1-15. Small Mammal Survey Biologists

Biologist
Will Kohn
Phil Richards
Erin Hitchcock
Kara Martinusen

1.7 SURVEY ANALYSIS FACTORS

Diurnal and Nocturnal Survey Factors. The majority of the surveys were conducted during the daytime to maximize the detection of most animals. Birds represent the largest component of the vertebrate fauna, and, because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of the fauna. Daytime surveys may result in fewer observations of animals that are more active at night. To address this potential factor, nocturnal focused surveys were conducted for nocturnally active special-status species that potentially occur on site, including ringtail and Tehachapi pocket mouse.

Reptiles and Amphibian Survey Factors. Reptiles and amphibians are secretive in their habits and are difficult to observe using standard meandering transects. Trapping was not considered to be effective for the Covered Species reptiles or amphibians. To account for survey difficulties, the Covered Species reptiles that could occur, based on pertinent distribution and habitat preference literature and recorded observations, are assumed to be present on the Covered Lands within modeled suitable habitat.

Roadway Access and Special-Status Breeding Raptor Survey Factors. Due to weather-related dirt roadway access limitations, the special-status breeding raptor surveys did not begin until March. Some of the target species may have begun nesting at an earlier time. Most trees in survey areas had not leafed out when raptor surveys began, and raptor nests were very visible to the surveyors. The second combined road and walking survey focused on areas that could not be covered thoroughly during the first pass, did not have roads within adequate detection distance, or for which an observation was made but no nest was found. The two surveys collectively provide an adequate assessment of special-status breeding raptors within the TMV Planning Area.

2.0 SPECIAL-STATUS PLANTS

Special-status plant surveys were conducted to determine the presence or absence of plant species that are considered endangered, rare, or threatened under California Environmental Quality Act (CEQA) Guideline 15380 (14 CCR 15000 et seq.). Endangered and threatened plant species are recognized in the context of CESA and FESA. Endangered, rare, or threatened plants, as defined in CEQA Guideline 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status plant species" in this report. Special-status plants, in the context of CEQA (California Public Resources Code, Section 21000 et seq.), are defined and described in terms of local, state, and Federal plans, regulations, or policies.

CDFG recognizes that plants on Lists 1A, 1B, and 2, as well as some on List 3, of the *California Native Plant Society* (*CNPS*) *Inventory of Rare and Endangered Plants in California* (CNPS 2008), may meet the criteria for listing as threatened or endangered and should be considered as special-status plants under CEQA (CDFG 2008c).

The primary goal of the special-status plant surveys was to determine the presence or absence of Federally or state-listed species and the California Rare Plant Rank (CRPR; formerly the "CNPS List") 1A, 1B, 2, and 3 species. The presence of all CRPR 4 species was documented even if the species were not considered locally rare. A previously undescribed species, Tehachapi buckwheat (*Eriogonum callistum*), was included during the focused special-status plant surveys because this species is known only from a few scattered locations in the Tehachapi Mountains in Kern County (Reveal 2006).

The following sections describe the methods used to survey for special-status plant species within the TMV Planning Area.

2.1 PREVIOUS ON-SITE BOTANICAL SURVEYS

Vollmar Consulting conducted floristic surveys in 2003 and 2004. The surveys covered approximately 4,500 ac. within the TMV Planning Area. J&S conducted floristic surveys in 2005 and 2006 that included the previously surveyed areas and additional portions of the TMV Planning Area. Data collected prior to 2007 were used to prepare a target list of special-status plant species that could potentially occur within the TMV Planning Area for comprehensive, sitewide surveys conducted in 2007. The data collected from these earlier surveys were also mapped on field maps used during the 2007 survey, as described below.

2.2 LITERATURE REVIEW

Dudek identified special-status botanical resources present or potentially present within the TMV Planning Area through a literature review using print and digital sources and through consultation with botanists at J&S, Dudek, and staff at TRC.

Dudek botanists also reviewed the species lists compiled by J&S and Vollmar Consulting (Vollmar Consulting 2004; J&S 2006) during a 4-year period from 2003 to 2006 to develop the project-specific list of special-status plants to address during surveys and evaluate in this technical report. Dudek also mapped and evaluated special-status plant species from the CNDDB (CDFG 2008b) and their potential to occur on the TMV Planning Area.

Dudek reviewed the online version of the *CNPS Inventory of Rare and Endangered Plants* (CNPS 2008) and conducted a CNPS nine-quad search. Dudek conducted the search for the six USGS 7.5-minute quadrangle (quad) maps in which TMV is located: Lebec, Pastoria Creek, Frazier Mountain, Grapevine, Winters Ridge, and La Liebre Ranch. Each of these quads was used to run the CNPS nine-quad search and results were combined into one comprehensive list. The nine-quad search provides special-status plant species, as defined by CNPS, which are known to occur in the focus quad and the eight quads surrounding the focus quad. Only CRPR 1, 2, and 3 plant species are included in this nine-quad search. Dudek then conducted a search for CRPR 4 species listed for Kern County that may occur within the TMV Planning Area, based on habitat, soil, and elevation preferences.

Dudek also reviewed *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999), which lists special-status species occurring in the Liebre Mountains, located approximately 25 mi. south of the TMV Planning Area. The plant species listed in this flora (Boyd 1999) were addressed during surveys and are evaluated in this technical report. Dudek determined the species' potential to occur within the TMV Planning Area, based on their known distribution, habitat preference, and/or elevation range.

This research resulted in a project-specific list of special-status plants that could occur within the TMV Planning Area. The list was used to conduct the special-status plant surveys. All field biologists had a copy of the potential occurrence list of target species during surveys in 2007. Three additional species were added to the CNPS inventory after surveys began.

Dudek determined the potential for an individual species to occur within the TMV Planning Area based on a review of habitat, soils, and elevation preferences, as well as geographic distribution of the species. The *Soil Survey of Kern County, California, Southeastern Part* (Valverde and Hill 1981) was reviewed to determine the location of soils that indicate potential habitat for some special-status plant species, particularly those that are edaphically restricted. Elevation ranges within the TMV Planning Area were calculated from the DTM created in 2006 (Intermap Technologies 2005) and were compared to known elevation ranges for the potentially occurring special-status plant species.

A species was not expected to occur when there was a convergence of the aforementioned factors indicating that the species would not occur on site. For example, if a plant occurs at elevations significantly below 2,600 ft above mean sea level (amsl) or significantly above 5,400 ft amsl, which is the elevation range of the TMV Planning Area, and suitable habitat for the species is not

present within the TMV Planning Area, the species was considered unlikely to occur on the site. Also, species were not expected to occur when the known distribution is clearly outside the TMV Planning Area's geographic range, such as Mexican flannelbush (*Fremontodendron mexicanum*), which is restricted to a few sites in San Diego County and Baja California.

2.3 SURVEY PREPARATION

Because the special-status plant surveys involved a concerted effort on the part of a large team of botanists over the course of several months, Dudek created detailed documentation on the survey protocol for staff to use during surveys. Information in the protocol packet included:

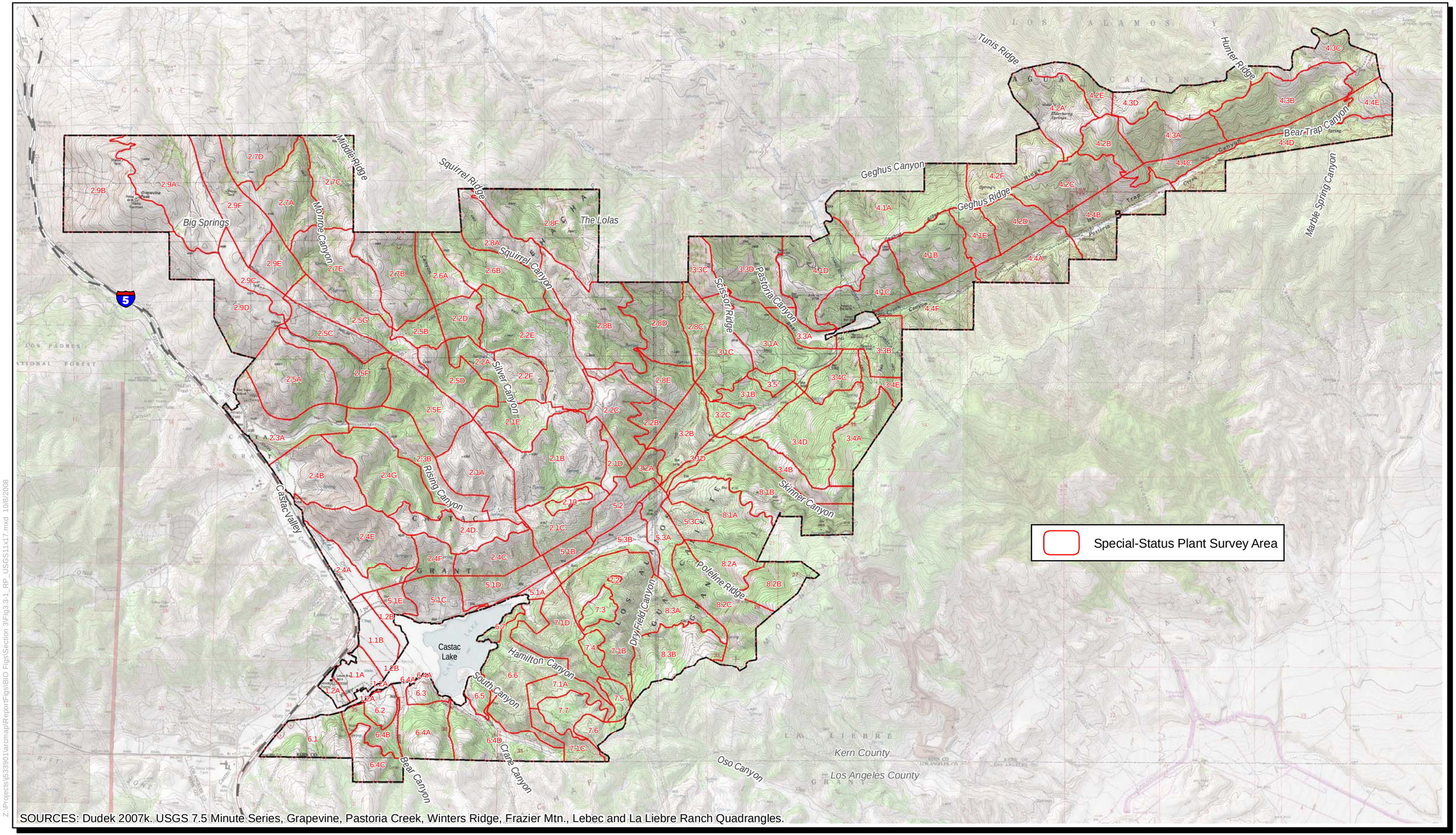
- Special-status species information (e.g., photos, Jepson pages)
- Survey protocols (e.g., GPS procedures, population sampling methods)
- Species lists from prior surveys
- Maps showing soils, geology, slopes, roads, fire history, and potential suitable habitat for potentially occurring plant species to provide botanists with appropriate environmental information that could affect species abundance and distribution (see below).

To ensure consistency among surveying botanists, Dudek organized and conducted an orientation meeting for botanists conducting special-status plant surveys. Botanists from J&S, Harmsworth and Associates, FL*x*, the University of California Riverside Herbarium, and Dudek formed the botanical team. Generally, teams were divided into groups of two, with one lead botanist and one support botanist working together.

Each group was assigned survey areas to cover. Survey areas were based on the phasing plan boundaries developed for the TMV project in early 2007. Some of these phasing plan boundaries were more than 1,000 ac. To provide a manageable tracking system and ensure adequate coverage for all areas within the TMV Planning Area, larger phasing areas were further divided, generating survey areas of between 5 and 530 ac. in size; the majority of the survey areas were between 100 and 200 ac. A total of 132 survey areas were created to efficiently manage botanists and data. Figure D.1-16 of this appendix shows the survey areas used for the special-status plant surveys in 2007.

Dudek reviewed Twisselmann (1967), Boyd (1999), Hickman (1996), CDFG (2008b), CNPS (2008), and relevant scientific articles about the special-status plant species potentially occurring in the TMV Planning Area to better understand their vegetation, soil, microhabitat (e.g., slope and aspect), and elevation range requirements. Dudek used this information to determine which species were expected to occur on site and to map the location of the most suitable habitat for species that were expected to occur on site and that are CRPR 1 or 2 species.

Field biologists used these data during surveys in much the same way as aerial photos or other map products to determine where there is the highest probability of encountering these CRPR 1 and 2 special-status plants. Comprehensive special-status plant surveys were conducted across the entire TMV Planning Area and were not limited by the habitat suitability maps to ensure that the potential occurrence of CRPR 3 and 4 species was adequately covered during surveys.



SOURCES: Dudek 2007k. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Special-Status Plant Survey Areas

FIGURE D.1-16

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2.4 REFERENCE POPULATION CHECKS

Plant species bloom at slightly different times each year depending on temperature, rainfall patterns, elevation, and other environmental factors. Reference population checks involve locating known populations of special-status plant species during a time frame when they are known to be blooming or exhibit other phenological characteristics that allow for species identification. Observations of reference populations during peak phenology provide assurance that these species would be identifiable if they were within the TMV Planning Area.

In early April 2006, Dudek staff conducted reference population checks for all potential Federally or state-listed species and many of the CRPR 1B species that could occur on the site and that were at peak phenology. Reference populations for other species were also noted during this analysis. Data gathered from the reference population checks were used to determine the appropriate time to begin field surveys.

2.5 FIELD SURVEY SCHEDULE

The botanical team conducted two passes of field surveys on the TMV Planning Area, plus a focused species survey in July and September for San Bernardino aster (Symphyotrichum defoliatum) and Greata's aster (S. [Aster] greatae), which are late-blooming species in the aster family (Asteraceae). The target plant species were grouped based on their blooming period to determine which groups of plants could be observed at the same time. This analysis concluded that all target species could be surveyed from mid-April through May (Pass 1) and in June (Pass 2). The asters bloom from July to November; therefore, Dudek surveyed for these species in mid-July and mid-September within the suitable habitat for San Bernardino aster and Greata's aster. Table D.1-16 lists survey dates, personnel, times, and weather conditions. The botanical survey team spent a total of 748 person-days (approximately 7,476 hours) conducting focused surveys for special-status plants.

Table D.1-16. Special-Status Plant Survey Schedule

Date	Personnel	Specific Task	Hours	Weather
04/09/07	Dudek: MSE, MLB, MNM	Reference population checks	0830–1800	Sunny, strong winds. 10% cloud cover.
04/10/07	Dudek: MSE, MLB	Reference population checks	0815–1615	Sunny, 60°F to 65°F. Light winds.
04/16/07	Dudek: MSE, MNM	Reference population checks	0745–1200	Sunny, clear skies, 60°F–75°F. 0–3 mph winds.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
04/16/07	Dudek: MSE, MLB, MNM, PCS, CJF, JSH, DWS Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, JPG, MML	Reference population checks, Pass 1	0745–1800	Sunny, clear skies, 60°F–75°F. 0–3 mph winds.
04/17/07	Dudek: MLB, DWS, JSH, PCS, CJF Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, JPG, MML, BDH	Pass 1	0730–1800	Sunny, 60°F–70°F. Winds 10–15 mph.
04/18/07	Dudek: MLB, DWS, JSH, PCS, CJF Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, DLK, JGD	Pass 1	0730–1630	Cold, 20°F–40°F. Windy, 10–40 mph.
04/19/07	Dudek: DWS, JSH, MLB Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP	Pass 1	0930–1700	Cool, mostly sunny. 50°F to 70°F. Overcast and windy at end of day.
04/22/07	Subs: BDH, FEC	Pass 1	1015–1600	Rainy, cold. Medium visibility.
04/23/07	Dudek: SMB, MLB, DWS, JRJ Subs: NDG, AKP, FEC, BDH	Pass 1	0830–1830	Slightly rainy and foggy in the morning, 50°F. Variable cloud cover throughout the day.
04/24/07	Dudek: SMB, DWS, JRJ, MLB Subs: BAP, REP, JLC, KMK, CJS, NDG, AKP, FEC, BDH	Pass 1	0800–1725	Sunny and clear, 58°F–70°F. Light breeze.
04/25/07	Dudek: SMB, DWS, JRJ, MLB Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, FEC, BDH	Pass 1	0815–1900	Clear, sunny, 60°F–75°F. Light breeze.
04/26/07	Dudek: SMB, DWS, JRJ Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0800–1830	Clear, sunny, cool, 55°F–70°F. Light winds.
04/27/07	Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0730–1945	Clear, sunny, calm. 55°F–75°F.
04/28/07	Subs: NDG, AKP	Pass 1	0830–1630	Clear, sunny, calm. 65°F–75°F.
04/30/07	Dudek: JSH, MLB, DWS, ELL, TBS	Pass 1	0800–2000	Mostly sunny, 70°F–77°F. Slight wind.
04/30/07	Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML	Pass 1	0800–1700	Mostly sunny, 70°F–77°F. Slight wind.
05/01/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0730–1845	Sunny, 50°F–70°F. Gusty winds, 10–20 mph.
05/02/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, RBH, JGD, DLK, FEC, MML	Pass 1	0700–1930	Sunny, becoming cloudy at end of day, 50°F–65°F. Windy, 10–30 mph.
05/03/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML, ACS, MCP	Pass 1	0745–1830	Variable cloud cover, 35°F–50°F. Windy, 20–40 mph.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
05/04/07	Dudek: ACS, MCP, ELL Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML	Pass 1	0730–1730	Cloudy, windy, cold.
05/05/07	Subs: NDG, AKP	Pass 1	0830–1630	Cloudy, windy, cold.
05/07/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP	Pass 1	0900–1830	Clear, warm. 70°F–80°F. No wind.
05/08/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP, RBH, JGD	Pass 1	0800–1930	Clear, warm. 67°F–80°F.
05/09/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP	Pass 1	0815–1730	Clear, warm. 70°F–80°F.
05/09/07	Subs: MML, FEC	Pass 1	1200–2000	Clear, warm. 70°F–80°F.
05/10/07	Dudek: JRJ, SMB, DWS, ELL, TBS, ACS, MCP, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0800–1830	Clear, warm. 70°F–80°F. Breezy in the afternoon.
05/11/07	Dudek: ELL, TBS, ACS, MCP Subs: CJS, KMK, JLC, JBG, JHN, NDG, AKP, FEC	Pass 1	0800–1700	Clear, warm. 62°F–80°F.
05/12/07	Subs: NDG, AKP	Pass 1	0830–1630	Clear, sunny, mild. High clouds, breezy.
05/14/07	Dudek: PCS, DWS, ELL, TBS, MLB Subs: KAB, CJS, KWD, REP, NDG, AKP, RBH, JGD, FEC	Pass 1	1230–1930	Clear, warm. 10°F–85°F. Slight breeze.
05/15/07	Dudek: PCS, MLB, DWS, ELL, TBS, ACS, MCP, MLB Subs: KAB, CJS, KWD, REP, NDG, AKP, RBH, JGD	Pass 1	0930–1915	Clear, warm, dry. 70°F–85°F. Sunny, gentle breeze.
05/16/07	Dudek: PCS, MLB, DWS, ELL, TBS, ACS, MCP Subs: KAB, CJS, KWD, REP, NDG, AKP, FEC	Pass 1	0800–1850	Sunny, warm, clear. 70°F–80°F.
05/17/07	Dudek: PCS, MLB, DWS, ELL, TBS Subs: KAB, CJS, KWD, REP, NDG, AKP, FEC	Pass 1	0900–1830	Clear, warm. 65°F–85°F.
05/21/07	Dudek: ELL, DAG, DWS, MLB Subs: JLC, BAP, BDS, JHN, NDG, AKP, RBH, JGD, FEC	Pass 1	0800–1800	Variable cloud cover. Windy, cool, 65°F.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
05/22/07	Dudek: ELL, DAG, DWS, MLB, PCS, TBS Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0830–1700	Windy, variable cloud cover. 65°F–75°F.
05/23/07	Dudek: ELL, DAG, DWS, MLB, PCS, ACS, TBS Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, FEC, MML	Pass 1	0900–2030	Clear, 63°F–70°F. Light wind from northeast.
05/24/07	Dudek: ELL, DAG, DWS, MLB, ACS, MCP Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, FEC, MML, BDH	Pass 1	0940–1915	Clear, sunny, warm. 60°F–80°F. Calm.
05/25/07	Dudek: ACS, MCP Subs: JLC, BAP, KWD, JHN, RAR, NDG, AKP, MML	Pass 1	0910–1725	Clear, warm, sunny.
05/26/07	Subs: NDG, AKP, MML	Pass 1	0945–1800	Clear, sunny, mild. Light breeze.
05/28/07	Subs: NDG, AKP	Pass 1	0800–1200	Clear, warm, sunny.
05/29/07	Dudek: KJM, JSH, MLB, PCS, ELL Subs: CJS, JLC, NDG, AKP, RBH, JGD, MML	Pass 1	1015–1930	Sunny and warm, 68°F–85°F. Winds 3–7 mph from the west.
05/30/07	Dudek: KJM, JSH, ELL, FMO, MLB, PCS, MNM Subs: CJS, JLC, NDG, AKP, MML, BDH, FEC, JPG	Pass 1	0745–1930	Sunny and warm, 70°F–85°F. Excellent visibility. North, northwest winds.
05/31/07	Dudek: KJM, JSH, ELL, FMO, MLB, MNM, ACS, MCP Subs: CJS, JLC, NDG, AKP, MML, BDH, FEC	Pass 1	0730–1630	Sunny and warm, 70°F–85°F.
06/01/07	Dudek: ACS, MCP Subs: NDG, AKP	Pass 1	0800–1800	Partly cloudy, warm, humid.
06/02/07	Subs: NDG, AKP	Pass 1	0800–1700	Clear, sunny, warm.
06/04/07	Dudek: JSH, FMO, DWS, ELL, MLB Subs: NDG, AKP, MML	Pass 2	0900–1830	Some clouds, breezy. 65°F–75°F, 5–10 mph.
06/05/07	Dudek: JSH, FMO, DWS, ELL, MLB Subs: NDG, AKP, RBH, JGD, MML	Pass 2	0730–1830	Mostly cloudy, breezy. 60°F–75°F, 5–15 mph. Poor visibility.
06/06/07	Dudek: JSH, FMO, DWS, ELL, ACS, MCP, TBS Subs: NDG, AKP, MML	Pass 2	0745–1845	Cold, windy, and cloudy. 50°F–60°F, 15–30 mph. Clearing and warming up late morning.
06/07/07	Dudek: DWS, ELL, ACS, MCP, TBS Subs: NDG, AKP, MML	Pass 2	0600–1400	Sunny and mild, 60°F–72°F.
06/08/07	Subs: RBH, JGD	Pass 2	0800–1800	Still, clear, mid-70s.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
06/11/07	Dudek: ELL, DWS, KJM, JSH, ACT, CJF, TAC, PCS, MLB Subs: KMK, KWD, BAP, MJW, JLC, NDG, AKP, MML	Pass 2	0930–1930	Sunny and clear, slight breeze. 70°F–85°F, 5–10 mph.
06/12/07	Dudek: ELL, DWS, KJM, JSH, ACT, CJF, TAC, ACS, PCS, MLB Subs: KMK, KWD, BAP, JLC, MJW, CJS, NDG, AKP, MML	Pass 2	0745–1930	Sunny and clear, 70°F–85°F.
06/13/07	Dudek: ELL, DWS, KJM, ACT, TAC, ACS, JSH, MLB Subs: KMK, KWD, MJW, BAP, JLC, CJS, NDG, AKP, RHB, JGD, MML	Pass 2	0745–1900	Clear and warm, 75°F–85°F.
06/14/07	Dudek: ELL, DWS, KJM, TAC, JSH, MLB, ACT Subs: KMK, KWD, BAP, MJW, CJS, JLC, NDG, AKP, RBH, JGD, MML	Pass 2	0730–1900	Clear and warm, 75°F –85°F. Breezy in the afternoon, 5–10 mph.
06/15/07	Subs: KMK, KWD, BAP, CJS, JLC, MJW, NDG, AKP, MML	Pass 2	0800–1900	Sunny, warm, clear. Around 72°F.
06/16/07	Subs: NDG, AKP	Pass 2	0800–1600	Clear, sunny, warm.
06/18/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, JGD	Pass 2	0830–1615	Clear, hot, mid-80s. Winds 5 mph.
06/19/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, RBH, JGD, MML	Pass 2	0730–1845	Breezy and clear, 63°F–90°F.
06/20/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, MML	Pass 2	0600–1800	Clear, hot. 70°F–90°F.
06/21/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, MML	Pass 2	0730–1800	Sunny and warm. Very little wind.
06/22/07	Dudek: ELL Subs: CJS, LAD, NDG, AKP	Pass 2	0800–1700	Mostly sunny, mild. High clouds. 70°F–88°F.
06/22/07	Subs: MML, ALW	Pass 2	1800–2100	Mostly sunny, mild. High clouds. 70°F–88°F.
06/23/07	Subs: NDG, AKP, MML, ALW	Pass 2	0845–1915	Mostly sunny, clear, hot.
06/25/07	Dudek: TAC, ELL, JSH, MLB Subs: CJS, BAP, BDS, JHN, MJW, JLC, NDG, AKP, RBH, JGD, MML, ALW	Pass 2	0930–1800	Sunny and clear, mild. Breezy.
06/26/07	Dudek: MLB, JSH, ELL, TAC Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0830–1900	Sunny and clear, warm.
06/27/07	Dudek: TAC, ELL, JSH, MLB, ACS Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0815–1830	Sunny and clear, 70°F–80°F.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
06/28/07	Dudek: MLB, ACS, MCP, ELL, TAC, JSH, FMO Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0710–1730	Sunny and clear, 75°F–80°F. Breezy.
06/29/07	Dudek: JSH, FMO, MCP, ACS Subs: CJS, JHN, JLC, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0750–1330	Sunny and clear. 70°F–80°F.
06/30/07	Subs: NDG, AKP, ALW, MML	Pass 2	0830–1630	Sunny and clear, warm.
07/02/07	Dudek: FMO Subs: REP, MJW, KWD, BDS, JLC, CJS	Pass 2	0700–1400	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/03/07	Dudek: FMO Subs: REP, MJW, KWD, BDS, JLC, CJS	Pass 2	0700–1730	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/09/07	Dudek: JRJ, FMO	Pass 2	0700–1845	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/10/07	Dudek: JRJ, FMO, MLB, TAC	Pass 3	1030–1800	Hazy sun, 79°F, winds 3–0mph.
07/11/07	Dudek: JSH, JRJ, FMO, MLB, TAC	Pass 3	0730–1830	Sunny and clear, 80°F–95°F.
07/12/07	Dudek: JSH, JRJ, FMO, MLB, TAC	Pass 3	0730–1730	Mostly sunny, 85°F–95°F.
09/18/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/19/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/20/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/21/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1200	Not recorded.

Personnel key:

Dudek: MSE: Megan Enright; MLB: Michelle Balk; MNM: Makela Mangrich; DWS: Daniel Simon; JSH: Joanna Hsu; PCS: Patricia Schuyler; CJF: Callie Ford; SMB: Scott Boczkiewicz; JRJ: Jon Jones; ELL: Eve Laeger; TBS: Teresa Salvato; ACS: Andy Sanders; MCP: Mitch Provance; DAG: Doug Gettinger; KJM: Kam Muri; FMO: F. Marcus Obregon; ACT: Andy Thomson; TAC: Traci Caddy.

Subconsultants: KAB: Katherine Bode; RAR: Ramona (Mona) Robison; MJW: Margaret Widdowson; KWD: Kevin Downing; BDS: Brad Schafer; CJS: Cristian Singer; NDG: Nathan Gale; AKP: Anuja Parikh; JPG: Paul Galvin; MML: Melissa Lippincott; DLK: Daryl Koutnik; JGD: Joe Decruyenaere; BDH: Barrett Holland; FEC: Florence Caplow; BAP: Brant Primrose; REP: Rob Preston; JLC: Jessica Cook; KMK: Korey Klutz; LAD: Lily Douglas; JHN: Joy Nishida; ALW: Adrian Wolf.

2.6 SAMPLING METHODS

Field survey methods conformed to CNPS botanical survey guidelines (CNPS 2001) and *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG 2000). All plant species encountered during the field surveys were identified to subspecies or variety, if applicable, to determine sensitivity status. All plant species encountered in the field within the TMV Specific Plan Area are listed in Appendix A to Appendix I to Appendix E-1 of the Tejon Mountain Village EIR (Kern County 2009). Latin and common names follow *The Jepson Manual* (Hickman 1996). When not listed in Hickman (1996), common names were taken from Twisselmann (1967). A variety of sources (e.g., Boyd 1999) were used to name species that are not included in either Hickman (1996) or Twisselmann (1967).

Coverage Rates and Transects

On average, coverage rates varied from 50 to 75 ac. per botanist per day. Coverage rates varied depending on presence of special-status species, topography, and suitability of habitat being surveyed. Meandering transects were walked and transect paths were recorded on field maps.

If a rare plant species was encountered, biologists recorded the center of the polygon in which it was observed as a point using GPS coordinates. Generally, observations of small- to medium-size plants were considered distinct if they were more than 3 m apart. For larger species, such as aromatic canyon gooseberry, observations were considered distinct if they were greater than 10 m apart. Field staff used sub-meter accuracy Trimble GPS units to record both the spatial data (the location) and data about the metapopulation including a count of individuals (recorded as a whole number if the metapopulation was less than 100 individuals or a range if the metapopulation was more than 100 individuals), slope, aspect, survey area, data, percent cover of native and non-native vegetation and bare ground, and any comments about the population. Where Trimble units were not available, this information was recorded on hard copy mapping field forms and spatial data was captured using GPS coordinate data and/or mapped on the 200 ft scale field maps.

2.7 DIGITIZATION PROCESS AND QUALITY ASSURANCE CHECKS

Once the survey was complete, the GPS data and mapping field form data for approximately 580 observations of special-status plant species were combined to generate comprehensive survey maps of the site. The mapping field form data were digitized from field maps or handwritten coordinate data (taken from GPS units) were converted into spatial data. Dudek GIS staff completed post-processing for GPS data by correcting the raw files to further increase the positional accuracy of the data. The population data (i.e., count of individuals, slope, aspect) from the GPS units was converted from these corrected files into GIS shapefiles. These data were then reviewed by lead botanists and modified if necessary to conform to field maps or data forms.

2.8 HYDROLOGIC FACTORS

Surveys were conducted on the entire study area in 2007, which was a below-average rainfall year for the state and for the hydrologic regions adjacent to the TMV Planning Area (DWR 2007). Temperatures were slightly higher than normal during the first 3 months of the surveys. Precipitation statewide was still 65% of the long-term average between October 2006 and July 2007, when the most substantial special-status plant surveys were conducted (DWR 2007).

The special-status plant surveys during 2007 were also comprehensive sitewide, were conducted at the peak phenology for all plant species expected to occur on site, and complemented surveys conducted in 2003 to 2005, when rainfall was normal to above normal. These factors indicate that the multiple-year survey effort was sufficient to identify the special-status plant species that occur within the TMV Planning Area.

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Appendix F

Air Quality and Greenhouse Gas Assessment

METHODOLOGY AND ASSUMPTIONS USED IN EMISSION CALCULATIONS FOR CRITERIA AIR POLLUTANTS AND GREENHOUSE GASES

General Methodology and Assumptions

The potential emissions of the alternatives evaluated in the Supplemental Draft Environmental Impact Statement (EIS) for the Draft Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) were estimated using the California Emissions Estimator Model (CalEEMod; all references to CalEEMod are Version 2011.1.1). CalEEMod was used to generate criteria air pollutant and greenhouse gas (GHG) emissions estimates for construction and operational scenarios under each of the following build alternatives:

- Proposed Tehachapi Uplands Multiple Species Habitat Conservation Plan (Proposed TU MSHCP) Alternative
- Condor Habitat Conservation Plan (Condor HCP) Alternative
- Condor Critical Habitat Avoidance MSHCP (CCH Avoidance MSHCP) Alternative
- Kern County General Plan Buildout Alternative.

In addition, the No Action Alternative was considered; however, this alternative does not envision any new development on the Covered Lands.

The amount of commercial and residential development under each alternative varies. The development levels for the Proposed TU MSHCP and Condor HCP Alternatives are identical, and the CCH Avoidance MSHCP Alternative entails 471 fewer single-family residential units. The development for each of these alternatives would occur in western Kern County (San Joaquin Valley Air Basin). The Kern County General Plan Buildout Alternative considers substantially more commercial and residential development than the other alternatives, a portion of which would occur in eastern Kern County within the Mojave Desert Air Basin. The commercial and residential development levels are shown in Table 1.

Table 1
Commercial and Residential Distribution for All Alternatives

Alternative/Construction Activity	Total	Activity by Air Basin[1]	
		San Joaquin Valley Air Basin	*Mojave Desert Air Basin*
No Action Alternative			
Residential (units)	0	0	0
Retail Space (ksf)	0	0	0
Office Space (ksf)	0	0	0

Table 1
Commercial and Residential Distribution for All Alternatives

Alternative/Construction Activity	Total	Activity by Air Basin[1]	
		San Joaquin Valley Air Basin	*Mojave Desert Air Basin*
Hotel (ksf)	0	0	0
Support Uses (ksf)	0	0	0
Proposed TU MSHCP/Condor HCP Alternatives			
Residential (units)	3,632	3,632	0
Retail Space (ksf)	488.878	488.878	0
Office Space (ksf)	1,315.512	1,315.512	0
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0
CCH Avoidance MSHCP Alternative			
Residential (units)	3,161	3,161	0
Retail Space (ksf)	488.878	488.878	0
Office Space (ksf)	1,315.512	1,315.512	0
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0
Kern County General Plan Buildout Alternative			
Residential (units)	7,238	5,797	1,441
Retail Space (ksf)	556.962	546.151	10.811
Office Space (ksf)	1,587.848	1,544.606	43.242
Hotel (ksf)	450	450	0
Support Uses (ksf)	350	350	0

ksf = thousand square feet.
[1] Only the San Joaquin Valley Air Basin and Mojave Desert Air Basin are addressed in this table, because no construction would occur within the South Coast Air Basin.

CalEEMod includes many default values for construction schedules, construction equipment, operational trip generation and trip lengths, energy usage, air pollutant and GHG emission factors, and many other parameters. Unless otherwise described in the following sections, the default values in CalEEMod were used in this analysis. The following sections describe the assumptions used to estimate the emissions associated with construction and operation under each build alternative.

Construction Assumptions

The construction of commercial and residential development under each build alternative was assumed to occur over a total of seven 4-year phases commencing in 2013 and completing in 2040. The rationale for the development phases within and outside the TMV Specific Plan Area (see Chapter 2 of the Supplemental Draft EIS for a description of the TMV Specific Plan Area and other areas) is described below. The general time periods for the seven phases are shown in Table 2.

Table 2
Overall Construction Schedule

Phase	Development Area under Construction	Commence Construction	Complete Construction
Phase 1	TMV Specific Plan Area	January 2013	December 2016
Phase 2	TMV Specific Plan Area	January 2017	December 2020
Phase 3	TMV Specific Plan Area Outside TMV Specific Plan Area	January 2021	December 2024
Phase 4	TMV Specific Plan Area Outside TMV Specific Plan Area	January 2025	December 2028
Phase 5	TMV Specific Plan Area Outside TMV Specific Plan Area	January 2029	December 2032
Phase 6	Outside TMV Specific Plan Area	January 2033	December 2036
Phase 7	Outside TMV Specific Plan Area	January 2037	December 2040

TMV Specific Plan Area – The construction of commercial and residential development in the TMV Specific Plan Area was based on a simulation of the proposed development evaluated in the environmental impact report (EIR) for the TMV Project. According to the EIR, the TMV Project would be constructed over an 18-year period in six phases varying in length from 2 to 5 years. The percentage of total commercial square feet and residential units under construction during Phases 1, 2, 3, 4, 5, and 6 of the TMV Project (Phases 4 and 5 were combined because they are only 2 years each) was calculated and applied to each build alternative for the development that would occur in the TMV Specific Plan Area. For the TU MSHCP Supplemental Draft EIS, it was assumed that development in the TMV Specific Plan Area would be constructed in five 4-year phases, totaling 20 years. The amounts of commercial and residential development assumed to be under construction in each of the five phases (Phases 1 through 5) are shown in Tables 3 and 4 for the Proposed TU MSHCP/Condor HCP/CCH Avoidance MSHCP Alternatives[1] and Kern County General Plan Buildout Alternative, respectively.

Outside the TMV Specific Plan Area – The construction of commercial and residential development outside the TMV Specific Plan Area was assumed to occur in five 4-year phases beginning in 2021 and completing in 2040. Because this development has not yet been entitled, it was assumed to commence two phases (8 years) later than that within the TMV Specific Plan Area. The percentage of total commercial square feet and residential units assumed to be under construction in each phase was 20% of the total since the development plans for areas outside the TMV Specific Plan Area are unknown. The amounts of commercial and residential development

[1] While the CCH Avoidance Alternative would include 471 fewer residential units than the Proposed TU MSHCP or Condor HCP Alternatives and the same amount of commercial space, development under the CCH Avoidance Alternative in any particular year would be similar to the activity levels in the other alternative. It would have slightly less development overall. Thus, the construction activity and related emissions for the CCH Avoidance were conservatively assumed to be the same as those for the other two alternatives.

assumed to occur in each of the five phases (Phases 3 to 7) are shown in Tables 3 and 4 for the Proposed TU MSHCP/Condor HCP/CCH Avoidance MSHCP Alternatives and the Kern County General Plan Buildout Alternative, respectively.

Combined Development – The total amounts of commercial and residential development assumed to occur in each of the seven phases under each build alternative are shown in Table 3 for the Proposed TU MSHCP, Condor HCP, and CCH Avoidance MSHCP Alternatives. As stated previously, all development under these alternatives would occur in the San Joaquin Valley Air Basin.

Table 3
Proposed TU MSHCP/Condor HCP/CCH Avoidance MSHCP Alternatives – Construction

Phase	Single-Family Residential (units)	Multifamily Residential (units)	Retail (sf)	Office (sf)	Hotel (sf)	Support Uses (sf)
Construction in TMV Specific Plan Area						
Phase 1	485	64	86,359	0	0	323,498
Phase 2	704	92	92,943	0	0	323,498
Phase 3	614	81	57,181	0	0	0
Phase 4	1,316	173	59,287	0	450,000	0
Phase 5	1,331	174	0	0	0	0
Construction in Non–TMV Specific Plan Area						
Phase 3	36	0	65,776	263,102	0	0
Phase 4	36	0	65,776	263,102	0	0
Phase 5	36	0	65,776	263,102	0	0
Phase 6	36	0	65,776	263,102	0	0
Phase 7	36	0	65,776	263,102	0	0
Proposed TU MSHCP/Condor HCP/CCH Avoidance MSHCP Alternatives Combined Construction						
Phase 1	485	64	86,359	0	0	323,498
Phase 2	704	92	92,943	0	0	323,498
Phase 3	651	81	122,956	263,102	0	0
Phase 4	1,353	173	125,063	263,102	450,000	0
Phase 5	1,367	174	65,776	263,102	0	0
Phase 6	36	0	65,776	263,102	0	0
Phase 7	36	0	65,776	263,102	0	0

Because development under the Kern County General Plan Buildout Alternative would occur within the San Joaquin Valley Air Basin and the Mojave Desert Air Basin, construction emissions generated in the San Joaquin Valley Air Basin and the Mojave Desert Air Basin were estimated separately using CalEEMod in each air basin as shown in Table 4.

Table 4
Kern County General Plan Buildout Alternative – Construction

Phase	Single-Family Residential (units)	Multifamily Residential (units)	Retail (sf)	Office (sf)	Hotel (sf)	Support Uses (sf)
Construction in San Joaquin Air Basin (TMV Specific Plan Area)						
Phase 1	485	64	86,359	0	0	323,498
Phase 2	704	92	92,943	0	0	323,498
Phase 3	614	81	57,181	0	0	0
Phase 4	1,316	173	59,287	0	450,000	0
Phase 5	1,331	174	0	0	0	0
Construction in San Joaquin Air Basin (Non–TMV Specific Plan Area)						
Phase 3	469	0	77,230	308,921	0	0
Phase 4	469	0	77,230	308,921	0	0
Phase 5	469	0	77,230	308,921	0	0
Phase 6	469	0	77,230	308,921	0	0
Phase 7	469	0	77,230	308,921	0	0
Construction in Mojave Desert Air Basin (Non–TMV Specific Plan Area)						
Phase 3	288	0	2,162	8,648	0	0
Phase 4	288	0	2,162	8,648	0	0
Phase 5	288	0	2,162	8,648	0	0
Phase 6	288	0	2,162	8,648	0	0
Phase 7	288	0	2,162	8,648	0	0
Kern County General Plan Buildout Alternative Combined Construction						
Phase 1	485	64	86,359	0	0	323,498
Phase 2	704	92	92,943	0	0	323,798
Phase 3	1,372	81	136,573	317,570	0	0
Phase 4	2,074	173	138,679	317,570	450,000	0
Phase 5	2,088	174	79,392	317,570	0	0
Phase 6	758	0	79,392	317,570	0	0
Phase 7	758	0	79,392	317,570	0	0

It is assumed that construction during each 4-year phase would commence in January and last approximately 48 months, ending in December. For example, the first phase of construction would occur from January 2013 to December 2016. Within each 4-year phase, the following assumptions were made regarding the timing of the construction subphases:

- Grading activities would begin at the start of each 4-year construction phase and continue for 6 months.
- Trenching activities for installation of utility and other underground features would occur for 3 months during the first year of each 4-year construction phase and would overlap with the grading phase for 1 month.

- Paving activities would occur following completion of the trenching phase and would last for 3 months during the first year of each 4-year construction phase.
- Building construction would commence 9 months into the first year (2013) and reach completion 3 months prior to final construction buildout in 2040. Thus, building construction would occur from November 2013 to September 2040. Architectural coating would start in the second month of the second year of construction (2014) following initial construction of residences and/or commercial buildings, and continue through the end of 2040. Thus, architectural coating activities would occur from February 2014 to December 2040. Building construction and architectural coating in Phases 2 through 7 would commence in January of the first year as a continuation of activity commenced in the previous phase (i.e., no breaks in building construction and architectural coating).

The schedules of the construction subphases associated with each 4-year construction phase are shown in Tables 5 through 11. The same construction schedules were applied to each build alternative.

Table 5
Phase 1 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2013	06/30/2013	129
Trenching	05/01/2013	07/31/2013	66
Paving	08/01/2013	10/31/2013	66
Building Construction	11/01/2013	12/31/2016	826
Architectural Coating	02/01/2014	12/31/2016	760

Table 6
Phase 2 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2017	06/30/2017	130
Trenching	05/01/2017	07/31/2017	66
Paving	08/01/2017	10/31/2017	66
Building Construction	01/01/2017	12/31/2020	1,044
Architectural Coating	01/01/2017	12/31/2020	1,044

Table 7
Phase 3 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2021	06/30/2021	129
Trenching	05/01/2021	07/31/2021	65
Paving	08/01/2021	10/31/2021	65
Building Construction	01/01/2021	12/31/2024	1,043
Architectural Coating	01/01/2021	12/31/2024	1,043

Table 8
Phase 4 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2025	06/30/2025	129
Trenching	05/01/2025	07/31/2025	66
Paving	08/01/2025	10/31/2025	66
Building Construction	01/01/2025	12/31/2028	1,043
Architectural Coating	01/01/2025	12/31/2028	1,043

Table 9
Phase 5 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2029	06/29/2029	130
Trenching	05/01/2029	07/31/2029	66
Paving	08/01/2029	10/31/2029	66
Building Construction	01/01/2029	12/31/2032	1,045
Architectural Coating	01/01/2029	12/31/2032	1,045

Table 10
Phase 6 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2033	06/30/2033	129
Trenching	05/01/2033	07/31/2033	65
Paving	08/01/2033	10/31/2033	66
Building Construction	01/01/2033	12/31/2036	1,043
Architectural Coating	01/01/2033	12/31/2036	1,043

Table 11
Phase 7 – Schedule for Subphases

Subphase Name	Start Date	End Date	Number of Days
Grading	01/01/2037	06/30/2037	129
Trenching	05/01/2037	07/31/2037	66
Paving	08/01/2037	10/31/2037	65
Building Construction	01/01/2037	09/30/2040	977
Architectural Coating	01/01/2037	12/31/2040	1,043

All construction equipment types were estimated using CalEEMod default values based on the proposed development, with the exception of the trenching phase. The number of default equipment units for each phase was increased inversely proportional to the reduction in phase duration (i.e., when the anticipated phase duration was less than the CalEEMod default duration for a phase, the quantity of equipment for that phase was increased to represent completion of the same amount of construction within a shorter time period using more equipment). Modeled equipment type and quantity assumed for the trenching phase was based on equipment assumptions utilized in the EIR for the TMV Project. CalEEMod default equipment-operating hours were assumed. Accordingly, construction was assumed to occur 5 days a week, approximately 22 days per month. CalEEMod default assumptions for total acres disturbed during grading were used.

Table 12 provides an example (Phase 1 for the Proposed TU MSHCP Alternative) of the equipment fleet per subphase; refer to attached spreadsheets for other alternatives and phases.

Table 12
General Equipment Fleet – Phase 1 of the Proposed TU MSHCP Alternative

Subphase Name	Off-Road Equipment Type	Number of Off-Road Equipment Units	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	2	8	82	0.64
	Excavators	5	8	157	0.57
	Graders	2	8	162	0.61
	Off-Highway Trucks	2	8	381	0.57
	Scrapers	5	8	356	0.72
	Tractors/Loaders/Backhoes	5	8	75	0.55
Trenching	Crawler Tractors	5	8	82	0.64
	Excavators	4	8	157	0.57
	Off-Highway Trucks	2	8	381	0.57
	Skid Steer Loaders	2	8	37	0.55
	Tractors/Loaders/Backhoes	2	8	75	0.55
Paving	Pavers	7	8	89	0.62
	Paving Equipment	7	8	82	0.53

Table 12
General Equipment Fleet – Phase 1 of the Proposed TU MSHCP Alternative

Subphase Name	Off-Road Equipment Type	Number of Off-Road Equipment Units	Usage Hours	Horse Power	Load Factor
	Rollers	7	8	84	0.56
Building Construction	Cranes	4	7	208	0.43
	Forklifts	11	8	149	0.3
	Generator Sets	4	8	84	0.74
	Off-Highway Trucks	2	8	381	0.57
	Tractors/Loaders/Backhoes	11	7	75	0.55
	Welders	4	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48

Table 13 provides an example (Phase 1 for the Proposed TU MSHCP Alternative; refer to attached spreadsheets for other alternatives and phases) of the number of worker and vendor (delivery) vehicle trips calculated by CalEEMod, which is based on the number of residential units, the square feet of commercial space being constructed in a given phase, and the CalEEMod default trip lengths. CalEEMod assumes that workers and vendors would come from locations relatively close to a project site (e.g., 10.8 miles for workers for a project in Kern County) and the actual trip lengths, which are unknown, may be longer due to the remote location of the Covered Lands relative to population centers. However, CalEEMod assumes that the full amount of the residential units and commercial space to be constructed in a phase would be under construction for the full length of the assumed building construction phase (up to 4 years). In actuality, on average a quarter of the development in a phase would occur per year (and even less over a shorter period, such as a given day or month); thus, the number of worker and vendor trips is overstated by a factor of a least four. Accordingly, the associated vehicle miles traveled (VMT, the product of trips times miles) are likely overstated relative to what might actually occur based on fewer trips but longer distances.

Table 13
Worker and Vendor Vehicle Trips and Trip Lengths

Subphase Name	Worker Trips	Vendor Trips	Worker Trip Length (miles one way)	Vendor Trip Length (miles one way)
Grading	53	0	10.8	7.3
Trenching	38	0	10.8	7.3
Paving	53	0	10.8	7.3
Building Construction	384	126	10.8	7.3
Architectural Coating	77	0	10.8	7.3

Operational Assumptions

General

Operational emissions were evaluated using CalEEMod at intervals corresponding to the construction phases. However, the operational emissions were estimated for the calendar year following the end of each construction phase when the development in the phase would be completed and operational. For example, the first construction phase would end in December 2016, and the corresponding operational emissions were estimated for 2017. Full buildout following the end of construction in 2040 would occur in 2041. Because CalEEMod only estimates emissions through 2040, 2040 was used to represent operational emissions in 2041. Compared to the emissions in 2041, this approach would result in comparable but slightly higher operational emissions, primarily due to those from motor vehicles, which generally decrease over time. For each build alternative, CalEEMod used the cumulative amount of commercial and residential development to date in the year being analyzed.

Distribution by Phase

TMV Specific Plan Area – The buildout of commercial and residential development in the TMV Specific Plan Area was based on a simulation of the proposed development evaluated in the EIR for the TMV Project. The TMV Project was anticipated to be constructed over an 18-year period in six phases varying in length from 2 to 5 years. The percentage of total commercial square feet and residential units to be completed at the end of Phases 1, 2, 3, 4, 5, and 6 (Phases 4 and 5 were combined because they are only 2 years each) was calculated and applied to each build alternative for the development that would occur in the TMV Specific Plan Area. As stated under Construction Assumptions, it was assumed that development in the TMV Specific Plan Area would be constructed in five 4-year phases, totaling 20 years. Full buildout was assumed to occur after 20 years, with 2033 as the first full operational year. The percentages of commercial and residential development assumed to occur in each of the five phases are shown in Tables 14 and 15, respectively.

Outside the TMV Specific Plan Area – The buildout of commercial and residential development outside the TMV Specific Plan Area was assumed to occur in five 4-year phases beginning in 2021 and completing in 2040, with 2041 as the first full operational year. The percentage of total commercial square feet and residential units to be completed and operational in each phase was assumed to be 20% since the development plans for areas outside the TMV Specific Plan Area are unknown. The percentages of commercial and residential development assumed to occur in each of the five phases (Phases 3 to 7) are shown in Tables 14 and 15, respectively.

Combined Development – The total amounts of commercial and residential development assumed to occur in each of the seven phases under each build alternative are shown in Tables 14 and 15, respectively.

Table 14
Development Phases – Commercial

Project Phase	Operational Year	Proposed TU MSHCP/Condor HCP	CCH Avoidance MSHCP	Kern County General Plan Buildout
		Percentage Completed		
TMV Specific Plan Area Commercial				
Phase 1	2017	9.4%	9.4%	9.4%
Phase 2	2021	57.3%	57.3%	57.3%
Phase 3	2025	60.1%	60.1%	60.1%
Phase 4	2029	99.9%	99.9%	99.9%
Phase 5	2033	100.0%	100.0%	100.0%
Non-TMV Specific Plan Area Commercial				
Phase 1	2017	—	—	—
Phase 2	2021	—	—	—
Phase 3	2025	20%	20%	20%
Phase 4	2029	40%	40%	40%
Phase 5	2033	60%	60%	60%
Phase 6	2037	80%	80%	80%
Phase 7	2041	100%	100%	100%
Total Commercial				
		Total Square Feet		
Phase 1	2017	190,111	190,111	190,111
Phase 2	2021	441,696	441,696	441,696
Phase 3	2025	774,990	774,990	843,074
Phase 4	2029	1,617,572	1,617,572	1,753,740
Phase 5	2033	1,946,634	1,946,634	2,150,886
Phase 6	2037	2,275,512	2,275,512	2,547,848
Phase 7	2041	2,604,390	2,604,390	2,944,810

Table 15
Development Phases – Residential

Project Phase	Operational Year	Proposed TU MSHCP/Condor HCP	CCH Avoidance MSHCP	Kern County General Plan Buildout
		Percentage Completed		
TMV Specific Plan Area Residential				
Phase 1	2017	8.2%	8.2%	8.2%
Phase 2	2021	24.8%	24.8%	24.8%
Phase 3	2025	37.2%	37.2%	37.2%
Phase 4	2029	66.5%	66.5%	66.5%
Phase 5	2033	100.0%	100.0%	100.0%
Non–TMV Specific Plan Area Residential				
Phase 1	2017	—	—	—
Phase 2	2021	—	—	—
Phase 3	2025	20%	20%	20%
Phase 4	2029	40%	40%	40%
Phase 5	2033	60%	60%	60%
Phase 6	2037	80%	80%	80%
Phase 7	2041	100%	100%	100%
Total Residential				
		Total Units		
Phase 1	2017	283	244	283
Phase 2	2021	856	739	856
Phase 3	2025	1,320	1,145	2,042
Phase 4	2029	2,368	2,054	3,810
Phase 5	2033	3,559	3,088	5,723
Phase 6	2037	3,596	3,125	6,480
Phase 7	2041	3,632	3,161	7,238

Motor Vehicles

Emissions from motor vehicles were estimated using CalEEMod. The default distribution of vehicle classes (e.g., automobiles, light trucks, medium- and heavy-duty trucks) incorporated in CalEEMod was utilized. The trip generation for each build alternative, shown in Table 16, was based on the TU MSHCP Traffic Study (Austin-Foust Associates 2011).

Table 16
Trip Generation

Trip Generation Rate			Average Daily Trips		
		Units	*Proposed TU MSHCP/Condor HCP*	*CCH Avoidance MSHCP*	*Kern County General Plan Buildout*
TMV Specific Plan Area					
Single-Family Residential	9.57	Trips/DU	29,189	24,681	29,189
Multifamily Residential	6.65	Trips/DU	2,660	2,660	2,660
Retail	57.61	Trips/ksf	6,128	6,128	6,128
Hotel	8.17	Trips/room	9,218	9,218	9,218
Support Uses	5.63	Trips/ksf	1,971	1,971	1,971
Outside TMV Specific Plan Area					
Single-Family Residential	9.57	Trips/DU	1,742	1,742	36,251
Retail	42.94	Trips/ksf	14,122	14,122	17,046
Office	11.01	Trips/ksf	14,484	14,484	17,482
Total Average Daily Trips			79,514	75,006	119,945

DU = dwelling unit

For each build alternative, the criteria pollutant emissions associated with motor vehicle trips were apportioned to the appropriate air basin as follows. The emissions associated with vehicle trips originating in or passing through the San Joaquin Valley Air Basin portion of the county were split between the San Joaquin Valley Air Basin and the South Coast Air Basin. Based on data in the traffic study (Austin-Foust Associates 2011), it was determined that 36.3% of VMT would occur in the San Joaquin Valley Air Basin and 63.7% of VMT would occur in the South Coast Air Basin (Austin-Foust Associates 2011). However, a portion of the vehicle trips generated in the Mojave Desert Air Basin under the Kern County General Plan Buildout Alternative was also evaluated as local trips (i.e., a local 5.3-mile trip length was analyzed to account for local trips within the Mojave Desert Air Basin). Distribution of vehicle trips is shown in Table 17.

Table 17
Distribution of Motor Vehicle Trips by Air Basin

	Proposed TU MSHCP/Condor HCP	CCH Avoidance MSHCP	Kern County General Plan Buildout
Trips to San Joaquin Valley Air Basin			
VMT	830,119	783,050	1,252,214
Percentage of Total	36.3%	36.3%	36.3%
Trips to South Coast Air Basin			
VMT	1,456,452	1,373,283	2,197,037
Percentage of Total	63.7%	63.7%	63.7%
Trips to San Joaquin Valley Air Basin			
VMT	2,286,571	2,156,333	3,449,251
Percentage of Total	100%	100%	100%

Table 17
Distribution of Motor Vehicle Trips by Air Basin

	Proposed TU MSHCP/Condor HCP	CCH Avoidance MSHCP	Kern County General Plan Buildout
Local Trips Generated in Mojave Desert Air Basin			
VMT	—	—	78,071
Percentage of Total	—	—	100%

For each build alternative, the average vehicle trip length was estimated to be 28.8 miles per trip for commercial and residential vehicle trips originating in or passing through the San Joaquin Valley Air Basin. The average vehicle trip length is a weighted composite of local trips, trips going north on Interstate 5 (I-5) in the county, and trips going south on I-5 to Los Angeles County. The values for these trips and the weighted average are shown in Table 18. In addition, an average of 5.3 miles per trip, using the value from the traffic report for local trips, was assigned to the local portion of trips for development in the Mojave Desert Air Basin under the Kern County General Plan Buildout Alternative (Austin-Foust Associates 2011). While CalEEMod typically uses different trip lengths for different types of trips (e.g., home to work, home to shopping, worker commute), the same trip length (28.8 average miles) was assumed for all trips. Furthermore, while CalEEMod defaults assume that some trips are primary trips (i.e., from one destination to another) and some trips are diverted or pass-by trips (i.e., an intermediate trip while traveling to a primary destination), in this case, all trips were assumed to be primary trips, thereby increasing the probable VMT that would include some shorter diverted and pass-by trips. This conservative assumption is consistent with the analysis in the traffic study (Austin-Foust Associates 2011).

Table 18
Average Trip Length (miles one way)

	Percentage of Trips	Proposed TU MSHCP/Condor HCP	CCH Avoidance MSHCP	Kern County General Plan Buildout
Trips Generated in San Joaquin Valley Air Basin				
Local	26%	5.3	5.3	5.3
I-5 North	23%	39.4	39.4	39.4
SR-138[1]	29%	22.5	22.5	22.5
I-5 South (south of SR-138)[1]	22%	53.6	53.6	53.6
Weighted Average	100%	28.8	28.8	28.8
Trips Generated in Mojave Desert Air Basin[2]				
Local Trip Length	100%	—	—	5.3

[1] Includes 8.5 miles from Kern/Los Angeles County line to the intersection of I-5 and State Route (SR)-138.
[2] Trips generated in the Mojave Desert Air Basin under the Kern County General Plan Buildout Alternative would include a local trip portion as well as a San Joaquin Valley Air Basin portion.

Other Motor Vehicle Assumptions

GHG emissions for light-duty and medium-duty motor vehicles were reduced to reflect the Assembly Bill 1493 (Pavley) GHG emission standards and the Low Carbon Fuel Standard as implemented in CalEEMod.

Area Sources

Area source emissions from landscape maintenance, natural gas combustion, fireplaces, consumer products, and maintenance use of architectural coatings were assigned to the air basin in which the commercial and residential development would occur under each build alternative. The GHG emissions were determined for each build alternative without regard to the air basins in which they would occur.

All operational area source emissions and construction emissions generated by the Proposed TU MSHCP, Condor HCP, and CCH Avoidance MSHCP Alternatives were assumed to occur within the San Joaquin Valley Air Basin. Operational area source emissions associated with the implementation of the Kern County General Plan Buildout Alternative were estimated for the entire buildout, including development in the San Joaquin Valley Air Basin and Mojave Desert Air Basin. Operational area source emissions generated by anticipated development within the Mojave Desert Air Basin were modeled separately. To calculate area source emissions generated by development within the San Joaquin Valley Air Basin only, the modeled Mojave Desert Air Basin area source emissions were subtracted from the Kern County General Plan Buildout Alternative area source emission estimates that represented emissions from *all* development under the Kern County General Plan Buildout Alternative.[2]

Specific area source emissions were modeled using CalEEMod as described as follows:

Landscape Maintenance – Landscape maintenance activity is based on that incorporated in CalEEMod for the various land use categories (e.g., commercial, residential).

Natural Gas Combustion – Criteria air pollutant and GHG emissions associated with natural gas combustion were evaluated using the default assumptions and factors in CalEEMod.

Fireplaces – Estimates for the number and type of wood stoves and wood or gas fireplaces were revised from the CalEEMod default values based on development restrictions in each air basin. All fireplaces in the TMV Specific Plan Area were assumed

[2] This approach was utilized so that CalEEMod could be used concurrently to estimate the emissions associated with motor vehicle trips originating in the Mojave Desert Air Basin and passing through the San Joaquin Valley Air Basin en route to I-5. By subtracting the area source emissions generated in the Mojave Desert Air Basin from the CalEEMod results, double-counting of the area source emissions due to development in the Mojave Desert Air Basin would be avoided.

to be fueled with natural gas per a mitigation measure in the EIR for the TMV Project prohibiting wood-burning fireplaces, while wood stoves and fireplaces (wood or gas) were distributed according to the CalEEMod default distribution for dwelling units outside the TMV Specific Plan Area (per San Joaquin Valley Air Pollution Control District Rule 4901, generally dwelling units on large lots, which account for most of the assumed development outside the TMV Specific Plan Area, may still install wood-burning devices).

Consumer Products – Consumer products are various solvents used in nonindustrial applications that emit volatile organic compounds during their product use. These typically include cleaning supplies, kitchen aerosols, cosmetics, and toiletries. Emissions from the use of consumer products associated with commercial and residential land uses were based on the methodology incorporated in CalEEMod, which assumes an emission rate of 2.14×10^{-5} pounds per square foot per day.

Architectural Coatings – Emissions of reactive organic gases associated with maintenance use of architectural coatings were evaluated using the default assumptions and factors in CalEEMod, which assumes that 10% of the building surface area is repainted annually.

Utilities and Public Services

CalEEMod was used to evaluate only the GHG emissions associated with the following utilities and public services:

Water – Indirect GHG emissions associated with water supply were evaluated using the CalEEMod default assumptions as to water usage rates; electricity used for transport, treatment, and distribution; and GHG emission factors for electrical generation.

Electricity – Electricity would be provided by Pacific Gas and Electric Company (PG&E). The project site would be located primarily in Climate Zone 7. The default GHG emission factors for electricity provided by PG&E were applied.

Wastewater – Wastewater treatment for residential units in the TMV Specific Plan Area was assumed to be an aerobic treatment process (i.e., wastewater treatment plant) as indicated in the EIR for the TMV Project. Wastewater treatment for residential units outside the TMV Specific Plan Area was assumed to be an aerobic treatment process for denser development areas (i.e., suitable for sewers) and septic tanks for development on large lots (e.g., lands zoned for one dwelling per 20 acres). Wastewater treatment for all nonresidential land uses was assumed to be 100% aerobic treatment process.

Solid Waste – Solid waste generation and disposal were evaluated using the CalEEMod default assumptions.

References

Austin-Foust Associates. 2011. Tehachapi Uplands Multiple Species Habitat Conservation Plan Traffic Study. October 7, 2011.

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 1

CONSTRUCTION ***2013-2016***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2013/01/01	2013/06/30	5	129
2	Trenching	Trenching	2013/05/01	2013/07/31	5	66
3	Paving	Paving	2013/08/01	2013/10/31	5	66
4	Building Construction	Building Construction	2013/11/01	2016/12/31	5	826
5	Architectural Coating	Architectural Coating	2014/02/01	2016/12/31	5	760

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	2	8	82	0.64
Grading	Excavators	5	8	157	0.57
Grading	Graders	2	8	162	0.61
Grading	Off-Highway Trucks	2	8	381	0.57
Grading	Scrapers	5	8	356	0.72
Grading	Tractors/Loaders/Back	5	8	75	0.55
Trenching	Crawler Tractors	5	8	82	0.64
Trenching	Excavators	4	8	157	0.57
Trenching	Off-Highway Trucks	2	8	381	0.57
Trenching	Skid Steer Loaders	2	8	37	0.55
Trenching	Tractors/Loaders/Back	2	8	75	0.55
Paving	Pavers	7	8	89	0.62
Paving	Paving Equipment	7	8	82	0.53
Paving	Rollers	7	8	84	0.56
Building Construction	Cranes	4	7	208	0.43
Building Construction	Forklifts	11	8	149	0.3
Building Construction	Generator Sets	4	8	84	0.74
Building Construction	Off-Highway Trucks	2	8	381	0.57
Building Construction	Tractors/Loaders/Back	11	7	75	0.55
Building Construction	Welders	4	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	903	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	53	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	38	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	53	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	384	126	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	77	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 2

CONSTRUCTION ***2017-2020***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2017/01/01	2017/06/30	5	130
2	Building Construction	Building Construction	2017/01/01	2020/12/31	5	1044
3	Architectural Coating	Architectural Coating	2017/01/01	2020/12/31	5	1044
4	Trenching	Trenching	2017/05/01	2017/07/31	5	66
5	Paving	Paving	2017/08/01	2017/10/31	5	66

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	4	8	82	0.64
	Grading	Excavators	7	8	157	0.57
	Grading	Graders	4	8	162	0.61
	Grading	Off-Highway Trucks	2	8	381	0.57
	Grading	Scrapers	7	8	356	0.72
	Grading	Tractors/Loaders/Back	7	8	75	0.55
	Building Construction	Cranes	4	7	208	0.43
	Building Construction	Forklifts	13	8	149	0.3
	Building Construction	Generator Sets	4	8	84	0.74
	Building Construction	Off-Highway Trucks	2	8	381	0.57
	Building Construction	Tractors/Loaders/Back	13	7	75	0.55
	Building Construction	Welders	4	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	5	8	82	0.64
	Trenching	Excavators	4	8	157	0.57
	Trenching	Off-Highway Trucks	2	8	381	0.57
	Trenching	Skid Steer Loaders	2	8	37	0.55
	Trenching	Tractors/Loaders/Back	2	8	75	0.55
	Paving	Pavers	10	8	89	0.62
	Paving	Paving Equipment	10	8	82	0.53
	Paving	Rollers	10	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	1430	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	78	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	485	153	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	97	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	38	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	75	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 3

CONSTRUCTION ***2021-2024***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2021/01/01	2021/06/30	5	129
2	Building Construction	Building Construction	2021/01/01	2024/12/31	5	1043
3	Architectural Coating	Architectural Coating	2021/01/01	2024/12/31	5	1043
4	Trenching	Trenching	2021/05/01	2021/07/30	5	65
5	Paving	Paving	2021/08/01	2021/10/29	5	65

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	4	8	82	0.64
	Grading	Excavators	7	8	157	0.57
	Grading	Graders	4	8	162	0.61
	Grading	Off-Highway Trucks	2	8	381	0.57
	Grading	Scrapers	7	8	356	0.72
	Grading	Tractors/Loaders/Back	7	8	75	0.55
	Building Construction	Cranes	4	7	208	0.43
	Building Construction	Forklifts	13	8	149	0.3
	Building Construction	Generator Sets	4	8	84	0.74
	Building Construction	Off-Highway Trucks	2	8	381	0.57
	Building Construction	Tractors/Loaders/Back	13	7	75	0.55
	Building Construction	Welders	4	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	3	8	82	0.64
	Trenching	Excavators	2	8	157	0.57
	Trenching	Off-Highway Trucks	1	8	381	0.57
	Trenching	Skid Steer Loaders	1	8	37	0.55
	Trenching	Tractors/Loaders/Back	1	8	75	0.55
	Paving	Pavers	10	8	89	0.62
	Paving	Paving Equipment	10	8	82	0.53
	Paving	Rollers	10	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0	0	7.1	1419	7.9	12	6.9	

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	78	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	416	142	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	83	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	20	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	75	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 4

CONSTRUCTION ***2025-2028***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2025/01/01	2025/06/30	5	129
2	Building Construction	Building Construction	2025/01/01	2028/12/31	5	1043
3	Architectural Coating	Architectural Coating	2025/01/01	2028/12/31	5	1043
4	Trenching	Trenching	2025/05/01	2025/07/31	5	66
5	Paving	Paving	2025/08/01	2025/10/31	5	66

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	6	8	82	0.64
	Grading	Excavators	12	8	157	0.57
	Grading	Graders	6	8	162	0.61
	Grading	Off-Highway Trucks	4	8	381	0.57
	Grading	Rubber Tired Dozers	0	8	358	0.59
	Grading	Scrapers	12	8	356	0.72
	Grading	Tractors/Loaders/Back	12	8	75	0.55
	Building Construction	Cranes	7	7	208	0.43
	Building Construction	Forklifts	22	8	149	0.3
	Building Construction	Generator Sets	7	8	84	0.74
	Building Construction	Off-Highway Trucks	6	8	381	0.57
	Building Construction	Tractors/Loaders/Back	22	7	75	0.55
	Building Construction	Welders	7	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	5	8	82	0.64
	Trenching	Excavators	4	8	157	0.57
	Trenching	Off-Highway Trucks	2	8	381	0.57
	Trenching	Skid Steer Loaders	2	8	37	0.55
	Trenching	Tractors/Loaders/Back	2	8	75	0.55
	Paving	Pavers	17	8	89	0.62
	Paving	Paving Equipment	17	8	82	0.53
	Paving	Rollers	17	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	2322	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	130	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	925	301	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	185	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	38	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	128	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 5

CONSTRUCTION ***2029-2032***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2029/01/01	2029/06/29	5	130
2	Building Construction	Building Construction	2029/01/01	2032/12/31	5	1045
3	Architectural Coating	Architectural Coating	2029/01/01	2032/12/31	5	1045
4	Trenching	Trenching	2029/05/01	2029/07/31	5	66
5	Paving	Paving	2029/08/01	2029/10/31	5	66

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	6	8	82	0.64
	Grading	Excavators	12	8	157	0.57
	Grading	Graders	6	8	162	0.61
	Grading	Off-Highway Trucks	4	8	381	0.57
	Grading	Scrapers	12	8	356	0.72
	Grading	Tractors/Loaders/Back	12	8	75	0.55
	Building Construction	Cranes	7	7	208	0.43
	Building Construction	Forklifts	22	8	149	0.3
	Building Construction	Generator Sets	7	8	84	0.74
	Building Construction	Off-Highway Trucks	6	8	381	0.57
	Building Construction	Tractors/Loaders/Back	22	7	75	0.55
	Building Construction	Welders	7	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	5	8	82	0.64
	Trenching	Excavators	4	8	157	0.57
	Trenching	Off-Highway Trucks	2	8	381	0.57
	Trenching	Skid Steer Loaders	2	8	37	0.55
	Trenching	Tractors/Loaders/Back	2	8	75	0.55
	Paving	Pavers	17	8	89	0.62
	Paving	Paving Equipment	17	8	82	0.53
	Paving	Rollers	17	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	1937.5	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	130	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	723	219	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	145	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	38	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	128	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 6

CONSTRUCTION ***2033-2036***

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2033/01/01	2033/06/30	5	129
2	Building Construction	Building Construction	2033/01/01	2036/12/31	5	1043
3	Architectural Coating	Architectural Coating	2033/01/01	2036/12/31	5	1043
4	Trenching	Trenching	2033/05/01	2033/07/31	5	65
5	Paving	Paving	2033/08/01	2033/10/31	5	66

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	1	8	82	0.64
	Grading	Excavators	1	8	157	0.57
	Grading	Graders	1	8	162	0.61
	Grading	Off-Highway Trucks	1	8	381	0.57
	Grading	Rubber Tired Dozers	0	8	358	0.59
	Grading	Scrapers	1	8	356	0.72
	Grading	Tractors/Loaders/Back	1	8	75	0.55
	Building Construction	Cranes	1	7	208	0.43
	Building Construction	Forklifts	1	8	149	0.3
	Building Construction	Generator Sets	1	8	84	0.74
	Building Construction	Off-Highway Trucks	1	8	381	0.57
	Building Construction	Tractors/Loaders/Back	1	7	75	0.55
	Building Construction	Welders	1	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	1	8	82	0.64
	Trenching	Excavators	1	8	157	0.57
	Trenching	Off-Highway Trucks	1	8	381	0.57
	Trenching	Skid Steer Loaders	1	8	37	0.55
	Trenching	Tractors/Loaders/Back	1	8	75	0.55
	Paving	Pavers	1	8	89	0.62
	Paving	Paving Equipment	1	8	82	0.53
	Paving	Rollers	1	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	258	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	15	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	119	58	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	24	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	13	0		10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	8	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP Alternative and Condor HCP Alternative
Construction Emissions Modeling

Phase 7

CONSTRUCTION 2037-2040

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2037/01/01	2037/06/30	5	129
2	Building Construction	Building Construction	2037/01/01	2040/09/30	5	977
3	Architectural Coating	Architectural Coating	2037/01/01	2040/12/31	5	1043
4	Trenching	Trenching	2037/05/01	2037/07/31	5	66
5	Paving	Paving	2037/08/01	2037/10/31	5	65

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	1	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Rubber Tired Dozers	0	8	358	0.59
Grading	Scrapers	1	8	356	0.72
Grading	Tractors/Loaders/Back	1	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
Building Construction	Forklifts	1	8	149	0.3
Building Construction	Generator Sets	1	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	1	7	75	0.55
Building Construction	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	1	8	82	0.64
Trenching	Excavators	1	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	1	8	89	0.62
Paving	Paving Equipment	1	8	82	0.53
Paving	Rollers	1	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	258	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	15	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	119	58	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	24	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	13	0	0			20	LD_Mix	HDT_Mix	HHDT
Paving	8	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
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Phase 1
CONSTRUCTION ***2013-2016***
****Same as MSHCP***

Phase 2
CONSTRUCTION ***2017-2020***
****Same as MSHCP***

Phase 3
CONSTRUCTION ***2021-2024***
SAN JOAQUIN VALLEY AIR BASIN - Phase 3

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2021/01/01	2021/06/30	5	129
2	Building Construction	Building Construction	2021/01/01	2024/12/31	5	1043
3	Architectural Coating	Architectural Coating	2021/01/01	2024/12/31	5	1043
4	Trenching	Trenching	2021/05/01	2021/07/31	5	65
5	Paving	Paving	2021/08/01	2021/10/31	5	65

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmen	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	4	8	82	0.64
Grading	Excavators	7	8	157	0.57
Grading	Graders	4	8	162	0.61
Grading	Off-Highway Trucks	2	8	381	0.57
Grading	Rubber Tired Dozers	0	8	358	0.59
Grading	Scrapers	7	8	356	0.72
Grading	Tractors/Loaders/Back	7	8	75	0.55
Building Construction	Cranes	4	7	208	0.43
Building Construction	Forklifts	13	8	149	0.3
Building Construction	Generator Sets	4	8	84	0.74
Building Construction	Off-Highway Trucks	2	8	381	0.57
Building Construction	Tractors/Loaders/Back	13	7	75	0.55
Building Construction	Welders	4	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	3	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	10	8	89	0.62
Paving	Paving Equipment	10	8	82	0.53
Paving	Rollers	10	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	1419	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	78	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	590	197	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	118	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	20	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	75	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
Construction Emissions Modeling

MOJAVE DESERT AIR BASIN - Phase 3

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2021/01/01	2021/06/30	5	129
2	Building Construction	Building Construction	2021/01/01	2024/12/31	5	1043
3	Architectural Coating	Architectural Coating	2021/01/01	2024/12/31	5	1043
4	Trenching	Trenching	2021/05/01	2021/07/31	5	65
5	Paving	Paving	2021/08/01	2021/10/31	5	65

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmen	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	2	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Scrapers	2	8	356	0.72
Grading	Tractors/Loaders/Back	2	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
Building Construction	Forklifts	4	8	149	0.3
Building Construction	Generator Sets	1	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	4	7	75	0.55
Building Construction	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	2	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	3	8	89	0.62
Paving	Paving Equipment	3	8	82	0.53
Paving	Rollers	3	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	387	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	107	33	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	21	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
Construction Emissions Modeling

Phase 4
CONSTRUCTION 2025-2028
SAN JOAQUIN VALLEY AIR BASIN - Phase 4

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2025/01/01	2025/06/30	5	129
2	Building Construction	Building Construction	2025/01/01	2028/12/31	5	1043
3	Architectural Coating	Architectural Coating	2025/01/01	2028/12/31	5	1043
4	Trenching	Trenching	2025/05/01	2025/07/31	5	66
5	Paving	Paving	2025/08/01	2025/10/31	5	66

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmei	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	8	8	82	0.64
Grading	Excavators	17	8	157	0.57
Grading	Graders	8	8	162	0.61
Grading	Off-Highway Trucks	6	8	381	0.57
Grading	Scrapers	17	8	356	0.72
Grading	Tractors/Loaders/Back	17	8	75	0.55
Building Construction	Cranes	10	7	208	0.43
Building Construction	Forklifts	31	8	149	0.3
Building Construction	Generator Sets	10	8	84	0.74
Building Construction	Off-Highway Trucks	8	8	381	0.57
Building Construction	Tractors/Loaders/Back	31	7	75	0.55
Building Construction	Welders	10	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	5	8	82	0.64
Trenching	Excavators	4	8	157	0.57
Trenching	Off-Highway Trucks	2	8	381	0.57
Trenching	Skid Steer Loaders	2	8	37	0.55
Trenching	Tractors/Loaders/Back	2	8	75	0.55
Paving	Pavers	23	8	89	0.62
Paving	Paving Equipment	23	8	82	0.53
Paving	Rollers	23	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	3225	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	183	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	1099	356	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	220	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	38	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	173	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
Construction Emissions Modeling

MOJAVE DESERT AIR BASIN - Phase 4

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2025/01/01	2025/06/30	5	129
2	Building Construction	Building Construction	2025/01/01	2028/12/31	5	1043
3	Architectural Coating	Architectural Coating	2025/01/01	2028/12/31	5	1043
4	Trenching	Trenching	2025/05/01	2025/07/31	5	66
5	Paving	Paving	2025/08/01	2025/10/31	5	66

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmei	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	2	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Scrapers	2	8	356	0.72
Grading	Tractors/Loaders/Back	2	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
Building Construction	Forklifts	4	8	149	0.3
Building Construction	Generator Sets	1	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	4	7	75	0.55
Building Construction	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	2	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	3	8	89	0.62
Paving	Paving Equipment	3	8	82	0.53
Paving	Rollers	3	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	387	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	25	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	107	33	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	21	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
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Phase 5

CONSTRUCTION 2029-2032

SAN JOAQUIN VALLEY AIR BASIN - Phase 5

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2029/01/01	2029/06/30	5	130
2	Building Construction	Building Construction	2029/01/01	2032/12/31	5	1045
3	Architectural Coating	Architectural Coating	2029/01/01	2032/12/31	5	1045
4	Trenching	Trenching	2029/05/01	2029/07/31	5	66
5	Paving	Paving	2029/08/01	2029/10/31	5	66

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmei	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	6	8	82	0.64
Grading	Excavators	12	8	157	0.57
Grading	Graders	6	8	162	0.61
Grading	Off-Highway Trucks	4	8	381	0.57
Grading	Scrapers	12	8	356	0.72
Grading	Tractors/Loaders/Back	12	8	75	0.55
Building Construction	Cranes	7	7	208	0.43
Building Construction	Forklifts	22	8	149	0.3
Building Construction	Generator Sets	7	8	84	0.74
Building Construction	Off-Highway Trucks	6	8	381	0.57
Building Construction	Tractors/Loaders/Back	22	7	75	0.55
Building Construction	Welders	7	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	5	8	82	0.64
Trenching	Excavators	4	8	157	0.57
Trenching	Off-Highway Trucks	2	8	381	0.57
Trenching	Skid Steer Loaders	2	8	37	0.55
Trenching	Tractors/Loaders/Back	2	8	75	0.55
Paving	Pavers	17	8	89	0.62
Paving	Paving Equipment	17	8	82	0.53
Paving	Rollers	17	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	2712.5	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	130	0	0	10.8	7.3	20			
Building Construction	897	274	0	10.8	7.3	20			
Architectural Coating	179	0	0	10.8	7.3	20			
Trenching	38	0		10.8	7.3	20			
Paving	128	0	0	10.8	7.3	20			

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
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MOJAVE DESERT AIR BASIN - Phase 5

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2029/01/01	2029/06/29	5	130
2	Building Construction	Building Construction	2029/01/01	2032/12/31	5	1045
3	Architectural Coating	Architectural Coating	2029/01/01	2032/12/31	5	1045
4	Trenching	Trenching	2029/05/01	2029/07/31	5	66
5	Paving	Paving	2029/08/01	2029/10/31	5	66

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	1	8	82	0.64
	Grading	Excavators	2	8	157	0.57
	Grading	Graders	1	8	162	0.61
	Grading	Off-Highway Trucks	1	8	381	0.57
	Grading	Scrapers	2	8	356	0.72
	Grading	Tractors/Loaders/Back	2	8	75	0.55
	Building Construction	Cranes	1	7	208	0.43
	Building Construction	Forklifts	4	8	149	0.3
	Building Construction	Generator Sets	1	8	84	0.74
	Building Construction	Off-Highway Trucks	1	8	381	0.57
	Building Construction	Tractors/Loaders/Back	4	7	75	0.55
	Building Construction	Welders	1	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	2	8	82	0.64
	Trenching	Excavators	2	8	157	0.57
	Trenching	Off-Highway Trucks	1	8	381	0.57
	Trenching	Skid Steer Loaders	1	8	37	0.55
	Trenching	Tractors/Loaders/Back	1	8	75	0.55
	Paving	Pavers	3	8	89	0.62
	Paving	Paving Equipment	3	8	82	0.53
	Paving	Rollers	3	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	390	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	107	33	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	21	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
Construction Emissions Modeling

Phase 6

CONSTRUCTION 2033-2036

SAN JOAQUIN VALLEY AIR BASIN - Phase 6

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2033/01/01	2033/06/30	5	129
2	Building Construction	Building Construction	2033/01/01	2036/12/31	5	1043
3	Architectural Coating	Architectural Coating	2033/01/01	2036/12/31	5	1043
4	Trenching	Trenching	2033/05/01	2033/07/31	5	65
5	Paving	Paving	2033/08/01	2033/10/31	5	66

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmei	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	2	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Rubber Tired Dozers	1	8	358	0.59
Grading	Scrapers	2	8	356	0.72
Grading	Tractors/Loaders/Back	2	8	75	0.55
Building Construction	Cranes	3	7	208	0.43
Building Construction	Forklifts	9	8	149	0.3
Building Construction	Generator Sets	9	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	9	7	75	0.55
Building Construction	Welders	3	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	2	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	7	8	89	0.62
Paving	Paving Equipment	7	8	82	0.53
Paving	Rollers	7	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	322.5	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	292	113	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	58	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0		10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	53	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
Construction Emissions Modeling

MOJAVE DESERT AIR BASIN - Phase 6

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2033/01/01	2033/06/30	5	129
2	Building Construction	Building Construction	2033/01/01	2036/12/31	5	1043
3	Architectural Coating	Architectural Coating	2033/01/01	2036/12/31	5	1043
4	Trenching	Trenching	2033/05/01	2033/07/31	5	65
5	Paving	Paving	2033/08/01	2033/10/31	5	66

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmer	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	2	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Scrapers	2	8	356	0.72
Grading	Tractors/Loaders/Back	2	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
Building Construction	Forklifts	4	8	149	0.3
Building Construction	Generator Sets	1	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	4	7	75	0.55
Building Construction	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	2	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	3	8	89	0.62
Paving	Paving Equipment	3	8	82	0.53
Paving	Rollers	3	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	387	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	107	33	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	21	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
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Phase 7
CONSTRUCTION 2037-2040
SAN JOAQUIN VALLEY AIR BASIN - Phase 7

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2037/01/01	2037/06/30	5	129
2	Building Construction	Building Construction	2037/01/01	2040/09/30	5	977
3	Architectural Coating	Architectural Coating	2037/01/01	2040/12/31	5	1043
4	Trenching	Trenching	2037/05/01	2037/07/31	5	66
5	Paving	Paving	2037/08/01	2037/10/31	5	65

Off-Road Equipment

	PhaseName	OffRoadEquipmentTyp	OffRoadEquipme	UsageHours	HorsePower	LoadFactor
	Grading	Crawler Tractors	2	8	82	0.64
	Grading	Excavators	5	8	157	0.57
	Grading	Graders	2	8	162	0.61
	Grading	Off-Highway Trucks	1	8	381	0.57
	Grading	Rubber Tired Dozers	0	8	358	0.59
	Grading	Scrapers	5	8	356	0.72
	Grading	Tractors/Loaders/Back	5	8	75	0.55
	Building Construction	Cranes	3	7	208	0.43
	Building Construction	Forklifts	10	8	149	0.3
	Building Construction	Generator Sets	10	8	84	0.74
	Building Construction	Off-Highway Trucks	1	8	381	0.57
	Building Construction	Tractors/Loaders/Back	10	7	75	0.55
	Building Construction	Welders	3	8	46	0.45
	Architectural Coating	Air Compressors	1	6	78	0.48
	Trenching	Crawler Tractors	2	8	82	0.64
	Trenching	Excavators	2	8	157	0.57
	Trenching	Off-Highway Trucks	1	8	381	0.57
	Trenching	Skid Steer Loaders	1	8	37	0.55
	Trenching	Tractors/Loaders/Back	1	8	75	0.55
	Paving	Pavers	7	8	89	0.62
	Paving	Paving Equipment	7	8	82	0.53
	Paving	Rollers	7	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	903	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	50	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	292	113	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	58	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	53	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Assumptions for Tehachapi Upland MSHCP SDEIS
Kern County General Plan Buildout Alternative
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MOJAVE DESERT AIR BASIN - Phase 7

Construction Phase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Grading	Grading	2037/01/01	2037/06/30	5	129
2	Building Construction	Building Construction	2037/01/01	2040/09/30	5	977
3	Architectural Coating	Architectural Coating	2037/01/01	2040/12/31	5	1043
4	Trenching	Trenching	2037/05/01	2037/07/31	5	66
5	Paving	Paving	2037/08/01	2037/10/31	5	65

Off-Road Equipment

PhaseName	OffRoadEquipmentTyp	OffRoadEquipmei	UsageHours	HorsePower	LoadFactor
Grading	Crawler Tractors	1	8	82	0.64
Grading	Excavators	2	8	157	0.57
Grading	Graders	1	8	162	0.61
Grading	Off-Highway Trucks	1	8	381	0.57
Grading	Scrapers	2	8	356	0.72
Grading	Tractors/Loaders/Back	2	8	75	0.55
Building Construction	Cranes	1	7	208	0.43
Building Construction	Forklifts	4	8	149	0.3
Building Construction	Generator Sets	1	8	84	0.74
Building Construction	Off-Highway Trucks	1	8	381	0.57
Building Construction	Tractors/Loaders/Back	4	7	75	0.55
Building Construction	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Trenching	Crawler Tractors	2	8	82	0.64
Trenching	Excavators	2	8	157	0.57
Trenching	Off-Highway Trucks	1	8	381	0.57
Trenching	Skid Steer Loaders	1	8	37	0.55
Trenching	Tractors/Loaders/Back	1	8	75	0.55
Paving	Pavers	3	8	89	0.62
Paving	Paving Equipment	3	8	82	0.53
Paving	Rollers	3	8	84	0.56

Dust from Material Movement

PhaseName	MaterialImported	MaterialExported	GradingSizeMetri	ImportExportPhas	MeanVehicleSp	AcresOfGra	MaterialMoistureC	MaterialMoist	MaterialSiltContent
Grading	0	0		0	7.1	390	7.9	12	6.9

Trips and VMT

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumb	WorkerTripLength	VendorTripLeng	HaulingTripL	WorkerVehicleClas	VendorVehicl	HaulingVehicleClass
Grading	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Building Construction	107	33	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Architectural Coating	21	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Trenching	18	0		10.8	7.3	20	LD_Mix	HDT_Mix	HHDT
Paving	23	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT

CalEEMod Construction Emissions for the Proposed TU MSHCP Alternative and Condor HCP Alternative

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 1 Construction 2013-2016

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Recreational	323.5	User Defined Unit
Apartments Low Rise	64	Dwelling Unit
Single Family Housing	485	Dwelling Unit
Strip Mall	86.36	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	3.56	25.76	15.36	0.03	0.67	1.49	2.16	0.06	1.49	1.55	0.00	2,806.51	2,806.51	0.29	0.00	2,812.54
2014	7.03	22.76	17.76	0.04	0.83	1.27	2.10	0.04	1.27	1.31	0.00	3,289.03	3,289.03	0.27	0.00	3,294.67
2015	7.12	20.67	17.20	0.04	0.84	1.13	1.97	0.04	1.13	1.17	0.00	3,285.54	3,285.54	0.25	0.00	3,290.77
2016	6.87	18.73	16.68	0.04	0.84	1.00	1.85	0.04	1.00	1.04	0.00	3,273.19	3,273.19	0.23	0.00	3,277.99
Total	**24.58**	**87.92**	**67.00**	**0.15**	**3.18**	**4.89**	**8.08**	**0.18**	**4.89**	**5.07**	**0.00**	**12,654.27**	**12,654.27**	**1.04**	**0.00**	**12,675.97**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	3.56	25.76	15.36	0.03	0.38	1.49	1.87	0.03	1.49	1.52	0.00	2,806.51	2,806.51	0.29	0.00	2,812.54
2014	7.03	22.76	17.76	0.04	0.83	1.27	2.10	0.04	1.27	1.31	0.00	3,289.03	3,289.03	0.27	0.00	3,294.67

2015	7.12	20.67	17.20	0.04	0.84	1.13	1.97	0.04	1.13	1.17	0.00	3,285.54	3,285.54	0.25	0.00	3,290.77
2016	6.87	18.73	16.68	0.04	0.84	1.00	1.85	0.04	1.00	1.04	0.00	3,273.19	3,273.19	0.23	0.00	3,277.99
Total	**24.58**	**87.92**	**67.00**	**0.15**	**2.89**	**4.89**	**7.79**	**0.15**	**4.89**	**5.04**	**0.00**	**12,654.27**	**12,654.27**	**1.04**	**0.00**	**12,675.97**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	1.82	14.54	7.65	0.02		0.71	0.71		0.71	0.71	0.00	1,565.36	1,565.36	0.15	0.00	1,568.45
Total	**1.82**	**14.54**	**7.65**	**0.02**	**0.48**	**0.71**	**1.19**	**0.05**	**0.71**	**0.76**	**0.00**	**1,565.36**	**1,565.36**	**0.15**	**0.00**	**1,568.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	30.24	30.24	0.00	0.00	30.28
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**30.24**	**30.24**	**0.00**	**0.00**	**30.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.19	0.00	0.19	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.82	14.54	7.65	0.02		0.71	0.71		0.71	0.71	0.00	1,565.36	1,565.36	0.15	0.00	1,568.45
Total	**1.82**	**14.54**	**7.65**	**0.02**	**0.19**	**0.71**	**0.90**	**0.02**	**0.71**	**0.73**	**0.00**	**1,565.36**	**1,565.36**	**0.15**	**0.00**	**1,568.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	30.24	30.24	0.00	0.00	30.28
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**30.24**	**30.24**	**0.00**	**0.00**	**30.28**

3.3 Trenching - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.48	3.26	1.98	0.00		0.20	0.20		0.20	0.20	0.00	353.02	353.02	0.04	0.00	353.83
Total	**0.48**	**3.26**	**1.98**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**353.02**	**353.02**	**0.04**	**0.00**	**353.83**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	11.09	11.09	0.00	0.00	11.11
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.09**	**11.09**	**0.00**	**0.00**	**11.11**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.48	3.26	1.98	0.00		0.20	0.20		0.20	0.20	0.00	353.02	353.02	0.04	0.00	353.83
Total	**0.48**	**3.26**	**1.98**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**353.02**	**353.02**	**0.04**	**0.00**	**353.83**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	11.09	11.09	0.00	0.00	11.11
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.09**	**11.09**	**0.00**	**0.00**	**11.11**

3.4 Paving - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.64	3.90	2.41	0.00		0.34	0.34		0.34	0.34	0.00	305.63	305.63	0.05	0.00	306.72
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.64**	**3.90**	**2.41**	**0.00**		**0.34**	**0.34**		**0.34**	**0.34**	**0.00**	**305.63**	**305.63**	**0.05**	**0.00**	**306.72**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	15.47	15.47	0.00	0.00	15.49
Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**15.47**	**15.47**	**0.00**	**0.00**	**15.49**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.64	3.90	2.41	0.00		0.34	0.34		0.34	0.34	0.00	305.63	305.63	0.05	0.00	306.72
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.64**	**3.90**	**2.41**	**0.00**		**0.34**	**0.34**		**0.34**	**0.34**	**0.00**	**305.63**	**305.63**	**0.05**	**0.00**	**306.72**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	15.47	15.47	0.00	0.00	15.49

Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**15.47**	**15.47**	**0.00**	**0.00**	**15.49**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.45	2.12	0.00		0.21	0.21		0.21	0.21	0.00	384.19	384.19	0.04	0.00	385.04
Total	**0.50**	**3.45**	**2.12**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**384.19**	**384.19**	**0.04**	**0.00**	**385.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.26	0.00	0.02	0.02	0.04	0.00	0.02	0.02	0.00	68.47	68.47	0.00	0.00	68.51
Worker	0.05	0.05	0.52	0.00	0.10	0.00	0.10	0.00	0.00	0.01	0.00	73.03	73.03	0.00	0.00	73.12
Total	**0.09**	**0.56**	**0.78**	**0.00**	**0.12**	**0.02**	**0.14**	**0.00**	**0.02**	**0.03**	**0.00**	**141.50**	**141.50**	**0.00**	**0.00**	**141.63**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.45	2.12	0.00		0.21	0.21		0.21	0.21	0.00	384.19	384.19	0.04	0.00	385.04

Total	**0.50**	**3.45**	**2.12**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**384.19**	**384.19**	**0.04**	**0.00**	**385.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.26	0.00	0.02	0.02	0.04	0.00	0.02	0.02	0.00	68.47	68.47	0.00	0.00	68.51
Worker	0.05	0.05	0.52	0.00	0.10	0.00	0.10	0.00	0.00	0.01	0.00	73.03	73.03	0.00	0.00	73.12
Total	**0.09**	**0.56**	**0.78**	**0.00**	**0.12**	**0.02**	**0.14**	**0.00**	**0.02**	**0.03**	**0.00**	**141.50**	**141.50**	**0.00**	**0.00**	**141.63**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.79	19.27	12.72	0.03		1.12	1.12		1.12	1.12	0.00	2,331.94	2,331.94	0.23	0.00	2,336.68
Total	**2.79**	**19.27**	**12.72**	**0.03**		**1.12**	**1.12**		**1.12**	**1.12**	**0.00**	**2,331.94**	**2,331.94**	**0.23**	**0.00**	**2,336.68**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.81	1.46	0.00	0.14	0.09	0.23	0.01	0.09	0.10	0.00	415.08	415.08	0.01	0.00	415.30
Worker	0.26	0.30	2.83	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	432.57	432.57	0.02	0.00	433.07
Total	**0.50**	**3.11**	**4.29**	**0.00**	**0.73**	**0.11**	**0.84**	**0.03**	**0.11**	**0.14**	**0.00**	**847.65**	**847.65**	**0.03**	**0.00**	**848.37**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.79	19.27	12.72	0.03		1.12	1.12		1.12	1.12	0.00	2,331.94	2,331.94	0.23	0.00	2,336.68
Total	**2.79**	**19.27**	**12.72**	**0.03**		**1.12**	**1.12**		**1.12**	**1.12**	**0.00**	**2,331.94**	**2,331.94**	**0.23**	**0.00**	**2,336.68**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.81	1.46	0.00	0.14	0.09	0.23	0.01	0.09	0.10	0.00	415.08	415.08	0.01	0.00	415.30
Worker	0.26	0.30	2.83	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	432.57	432.57	0.02	0.00	433.07
Total	**0.50**	**3.11**	**4.29**	**0.00**	**0.73**	**0.11**	**0.84**	**0.03**	**0.11**	**0.14**	**0.00**	**847.65**	**847.65**	**0.03**	**0.00**	**848.37**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.57	17.46	12.57	0.03		1.00	1.00		1.00	1.00	0.00	2,331.94	2,331.94	0.21	0.00	2,336.32
Total	**2.57**	**17.46**	**12.57**	**0.03**		**1.00**	**1.00**		**1.00**	**1.00**	**0.00**	**2,331.94**	**2,331.94**	**0.21**	**0.00**	**2,336.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.35	0.00	0.14	0.08	0.22	0.01	0.08	0.10	0.00	414.61	414.61	0.01	0.00	414.80
Worker	0.24	0.26	2.52	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	421.25	421.25	0.02	0.00	421.71
Total	**0.46**	**2.82**	**3.87**	**0.00**	**0.73**	**0.10**	**0.83**	**0.03**	**0.10**	**0.14**	**0.00**	**835.86**	**835.86**	**0.03**	**0.00**	**836.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.57	17.46	12.57	0.03		1.00	1.00		1.00	1.00	0.00	2,331.94	2,331.94	0.21	0.00	2,336.32
Total	**2.57**	**17.46**	**12.57**	**0.03**		**1.00**	**1.00**		**1.00**	**1.00**	**0.00**	**2,331.94**	**2,331.94**	**0.21**	**0.00**	**2,336.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.35	0.00	0.14	0.08	0.22	0.01	0.08	0.10	0.00	414.61	414.61	0.01	0.00	414.80
Worker	0.24	0.26	2.52	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	421.25	421.25	0.02	0.00	421.71
Total	**0.46**	**2.82**	**3.87**	**0.00**	**0.73**	**0.10**	**0.83**	**0.03**	**0.10**	**0.14**	**0.00**	**835.86**	**835.86**	**0.03**	**0.00**	**836.51**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.37	15.81	12.45	0.03		0.88	0.88		0.88	0.88	0.00	2,331.94	2,331.94	0.19	0.00	2,335.97
Total	**2.37**	**15.81**	**12.45**	**0.03**		**0.88**	**0.88**		**0.88**	**0.88**	**0.00**	**2,331.94**	**2,331.94**	**0.19**	**0.00**	**2,335.97**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.32	1.26	0.00	0.14	0.07	0.21	0.01	0.07	0.09	0.00	414.13	414.13	0.01	0.00	414.31
Worker	0.22	0.24	2.28	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	411.36	411.36	0.02	0.00	411.78
Total	**0.42**	**2.56**	**3.54**	**0.00**	**0.73**	**0.09**	**0.82**	**0.03**	**0.09**	**0.13**	**0.00**	**825.49**	**825.49**	**0.03**	**0.00**	**826.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.37	15.81	12.45	0.03		0.88	0.88		0.88	0.88	0.00	2,331.94	2,331.94	0.19	0.00	2,335.97
Total	**2.37**	**15.81**	**12.45**	**0.03**		**0.88**	**0.88**		**0.88**	**0.88**	**0.00**	**2,331.94**	**2,331.94**	**0.19**	**0.00**	**2,335.97**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.32	1.26	0.00	0.14	0.07	0.21	0.01	0.07	0.09	0.00	414.13	414.13	0.01	0.00	414.31
Worker	0.22	0.24	2.28	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	411.36	411.36	0.02	0.00	411.78
Total	**0.42**	**2.56**	**3.54**	**0.00**	**0.73**	**0.09**	**0.82**	**0.03**	**0.09**	**0.13**	**0.00**	**825.49**	**825.49**	**0.03**	**0.00**	**826.09**

3.6 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.03	0.03		0.03	0.03	0.00	30.35	30.35	0.00	0.00	30.44

Total	**3.69**	**0.33**	**0.23**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**30.35**	**30.35**	**0.00**	**0.00**	**30.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.11	0.00	0.11	0.00	0.00	0.01	0.00	79.09	79.09	0.00	0.00	79.19
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.11**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**	**0.00**	**79.09**	**79.09**	**0.00**	**0.00**	**79.19**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.03	0.03		0.03	0.03	0.00	30.35	30.35	0.00	0.00	30.44
Total	**3.69**	**0.33**	**0.23**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**30.35**	**30.35**	**0.00**	**0.00**	**30.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.11	0.00	0.11	0.00	0.00	0.01	0.00	79.09	79.09	0.00	0.00	79.19
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.11**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**	**0.00**	**79.09**	**79.09**	**0.00**	**0.00**	**79.19**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.34	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.37
Total	**4.05**	**0.34**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.37**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.51	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	84.47	84.47	0.00	0.00	84.56
Total	**0.05**	**0.05**	**0.51**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**84.47**	**84.47**	**0.00**	**0.00**	**84.56**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.34	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.37
Total	**4.05**	**0.34**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.37**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.51	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	84.47	84.47	0.00	0.00	84.56
Total	**0.05**	**0.05**	**0.51**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**84.47**	**84.47**	**0.00**	**0.00**	**84.56**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.31	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.36
Total	**4.05**	**0.31**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.36**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.05	0.46	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	82.49	82.49	0.00	0.00	82.57
Total	**0.04**	**0.05**	**0.46**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**82.49**	**82.49**	**0.00**	**0.00**	**82.57**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.31	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.36
Total	**4.05**	**0.31**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.36**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.05	0.46	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	82.49	82.49	0.00	0.00	82.57

Total	**0.04**	**0.05**	**0.46**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**82.49**	**82.49**	**0.00**	**0.00**	**82.57**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 2 Construction 2017-2020

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Apartments Low Rise	92	Dwelling Unit
Single Family Housing	704	Dwelling Unit
Strip Mall	92.943	1000sqft
User Defined Recreational	323.498	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	9.98	39.85	34.20	0.07	1.91	2.17	4.08	0.14	2.17	2.30	0.00	6,726.93	6,726.93	0.49	0.00	6,737.19
2018	6.60	16.79	17.94	0.04	1.06	0.85	1.91	0.02	0.84	0.86	0.00	3,653.63	3,653.63	0.21	0.00	3,658.11
2019	6.38	15.18	17.54	0.04	1.06	0.74	1.79	0.02	0.73	0.75	0.00	3,641.00	3,641.00	0.20	0.00	3,645.13
2020	6.22	13.80	17.27	0.04	1.06	0.64	1.70	0.02	0.63	0.65	0.00	3,643.51	3,643.51	0.18	0.00	3,647.34
Total	**29.18**	**85.62**	**86.95**	**0.19**	**5.09**	**4.40**	**9.48**	**0.20**	**4.37**	**4.56**	**0.00**	**17,665.07**	**17,665.07**	**1.08**	**0.00**	**17,687.77**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	9.98	39.85	34.20	0.07	1.45	2.17	3.62	0.09	2.17	2.25	0.00	6,726.93	6,726.93	0.49	0.00	6,737.19
2018	6.60	16.79	17.94	0.04	1.06	0.85	1.91	0.02	0.84	0.86	0.00	3,653.63	3,653.63	0.21	0.00	3,658.11

2019	6.38	15.18	17.54	0.04	1.06	0.74	1.79	0.02	0.73	0.75	0.00	3,641.00	3,641.00	0.20	0.00	3,645.13
2020	6.22	13.80	17.27	0.04	1.06	0.64	1.70	0.02	0.63	0.65	0.00	3,643.51	3,643.51	0.18	0.00	3,647.34
Total	**29.18**	**85.62**	**86.95**	**0.19**	**4.63**	**4.40**	**9.02**	**0.15**	**4.37**	**4.51**	**0.00**	**17,665.07**	**17,665.07**	**1.08**	**0.00**	**17,687.77**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.76	0.00	0.76	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	2.07	14.67	10.23	0.02		0.70	0.70		0.70	0.70	0.00	2,213.12	2,213.12	0.17	0.00	2,216.63
Total	**2.07**	**14.67**	**10.23**	**0.02**	**0.76**	**0.70**	**1.46**	**0.08**	**0.70**	**0.78**	**0.00**	**2,213.12**	**2,213.12**	**0.17**	**0.00**	**2,216.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	40.63	40.63	0.00	0.00	40.67
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**40.63**	**40.63**	**0.00**	**0.00**	**40.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.30	0.00	0.30	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	2.07	14.67	10.23	0.02		0.70	0.70		0.70	0.70	0.00	2,213.12	2,213.12	0.17	0.00	2,216.63
Total	**2.07**	**14.67**	**10.23**	**0.02**	**0.30**	**0.70**	**1.00**	**0.03**	**0.70**	**0.73**	**0.00**	**2,213.12**	**2,213.12**	**0.17**	**0.00**	**2,216.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	40.63	40.63	0.00	0.00	40.67
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**40.63**	**40.63**	**0.00**	**0.00**	**40.67**

3.3 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.35	15.38	13.61	0.03		0.84	0.84		0.84	0.84	0.00	2,513.78	2,513.78	0.19	0.00	2,517.78
Total	**2.35**	**15.38**	**13.61**	**0.03**		**0.84**	**0.84**		**0.84**	**0.84**	**0.00**	**2,513.78**	**2,513.78**	**0.19**	**0.00**	**2,517.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.41	0.01	0.17	0.08	0.25	0.01	0.08	0.09	0.00	500.41	500.41	0.01	0.00	500.61
Worker	0.25	0.27	2.59	0.01	0.74	0.03	0.76	0.03	0.03	0.06	0.00	505.27	505.27	0.02	0.00	505.76
Total	**0.47**	**2.83**	**4.00**	**0.02**	**0.91**	**0.11**	**1.01**	**0.04**	**0.11**	**0.15**	**0.00**	**1,005.68**	**1,005.68**	**0.03**	**0.00**	**1,006.37**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.35	15.38	13.61	0.03		0.84	0.84		0.84	0.84	0.00	2,513.78	2,513.78	0.19	0.00	2,517.78
Total	**2.35**	**15.38**	**13.61**	**0.03**		**0.84**	**0.84**		**0.84**	**0.84**	**0.00**	**2,513.78**	**2,513.78**	**0.19**	**0.00**	**2,517.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.41	0.01	0.17	0.08	0.25	0.01	0.08	0.09	0.00	500.41	500.41	0.01	0.00	500.61
Worker	0.25	0.27	2.59	0.01	0.74	0.03	0.76	0.03	0.03	0.06	0.00	505.27	505.27	0.02	0.00	505.76
Total	**0.47**	**2.83**	**4.00**	**0.02**	**0.91**	**0.11**	**1.01**	**0.04**	**0.11**	**0.15**	**0.00**	**1,005.68**	**1,005.68**	**0.03**	**0.00**	**1,006.37**

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.17	13.90	13.56	0.03		0.73	0.73		0.73	0.73	0.00	2,523.45	2,523.45	0.18	0.00	2,527.14
Total	**2.17**	**13.90**	**13.56**	**0.03**		**0.73**	**0.73**		**0.73**	**0.73**	**0.00**	**2,523.45**	**2,523.45**	**0.18**	**0.00**	**2,527.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.34	1.33	0.01	0.17	0.07	0.24	0.00	0.07	0.07	0.00	501.84	501.84	0.01	0.00	502.02
Worker	0.23	0.24	2.35	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	495.89	495.89	0.02	0.00	496.34
Total	**0.43**	**2.58**	**3.68**	**0.02**	**0.91**	**0.10**	**1.01**	**0.01**	**0.09**	**0.10**	**0.00**	**997.73**	**997.73**	**0.03**	**0.00**	**998.36**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.17	13.90	13.56	0.03		0.73	0.73		0.73	0.73	0.00	2,523.45	2,523.45	0.18	0.00	2,527.14
Total	**2.17**	**13.90**	**13.56**	**0.03**		**0.73**	**0.73**		**0.73**	**0.73**	**0.00**	**2,523.45**	**2,523.45**	**0.18**	**0.00**	**2,527.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.34	1.33	0.01	0.17	0.07	0.24	0.00	0.07	0.07	0.00	501.84	501.84	0.01	0.00	502.02
Worker	0.23	0.24	2.35	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	495.89	495.89	0.02	0.00	496.34

Total	**0.43**	**2.58**	**3.68**	**0.02**	**0.91**	**0.10**	**1.01**	**0.01**	**0.09**	**0.10**	**0.00**	**997.73**	**997.73**	**0.03**	**0.00**	**998.36**

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.99	12.53	13.47	0.03		0.63	0.63		0.63	0.63	0.00	2,523.45	2,523.45	0.16	0.00	2,526.85
Total	**1.99**	**12.53**	**13.47**	**0.03**		**0.63**	**0.63**		**0.63**	**0.63**	**0.00**	**2,523.45**	**2,523.45**	**0.16**	**0.00**	**2,526.85**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.15	1.25	0.01	0.17	0.06	0.23	0.00	0.06	0.06	0.00	501.43	501.43	0.01	0.00	501.60
Worker	0.22	0.22	2.15	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	485.71	485.71	0.02	0.00	486.12
Total	**0.40**	**2.37**	**3.40**	**0.02**	**0.91**	**0.09**	**1.00**	**0.01**	**0.08**	**0.09**	**0.00**	**987.14**	**987.14**	**0.03**	**0.00**	**987.72**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.99	12.53	13.47	0.03		0.63	0.63		0.63	0.63	0.00	2,523.45	2,523.45	0.16	0.00	2,526.85

Total	**1.99**	**12.53**	**13.47**	**0.03**		**0.63**	**0.63**		**0.63**	**0.63**	**0.00**	**2,523.45**	**2,523.45**	**0.16**	**0.00**	**2,526.85**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.15	1.25	0.01	0.17	0.06	0.23	0.00	0.06	0.06	0.00	501.43	501.43	0.01	0.00	501.60
Worker	0.22	0.22	2.15	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	485.71	485.71	0.02	0.00	486.12
Total	**0.40**	**2.37**	**3.40**	**0.02**	**0.91**	**0.09**	**1.00**	**0.01**	**0.08**	**0.09**	**0.00**	**987.14**	**987.14**	**0.03**	**0.00**	**987.72**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.84	11.34	13.45	0.03		0.54	0.54		0.54	0.54	0.00	2,533.12	2,533.12	0.15	0.00	2,536.26
Total	**1.84**	**11.34**	**13.45**	**0.03**		**0.54**	**0.54**		**0.54**	**0.54**	**0.00**	**2,533.12**	**2,533.12**	**0.15**	**0.00**	**2,536.26**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.17	2.00	1.19	0.01	0.17	0.06	0.23	0.00	0.05	0.06	0.00	503.00	503.00	0.01	0.00	503.15
Worker	0.21	0.20	1.99	0.01	0.75	0.03	0.77	0.01	0.02	0.03	0.00	478.32	478.32	0.02	0.00	478.72
Total	**0.38**	**2.20**	**3.18**	**0.02**	**0.92**	**0.09**	**1.00**	**0.01**	**0.07**	**0.09**	**0.00**	**981.32**	**981.32**	**0.03**	**0.00**	**981.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.84	11.34	13.45	0.03		0.54	0.54		0.54	0.54	0.00	2,533.12	2,533.12	0.15	0.00	2,536.26
Total	**1.84**	**11.34**	**13.45**	**0.03**		**0.54**	**0.54**		**0.54**	**0.54**	**0.00**	**2,533.12**	**2,533.12**	**0.15**	**0.00**	**2,536.26**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.17	2.00	1.19	0.01	0.17	0.06	0.23	0.00	0.05	0.06	0.00	503.00	503.00	0.01	0.00	503.15
Worker	0.21	0.20	1.99	0.01	0.75	0.03	0.77	0.01	0.02	0.03	0.00	478.32	478.32	0.02	0.00	478.72
Total	**0.38**	**2.20**	**3.18**	**0.02**	**0.92**	**0.09**	**1.00**	**0.01**	**0.07**	**0.09**	**0.00**	**981.32**	**981.32**	**0.03**	**0.00**	**981.87**

3.4 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.89					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.28	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.15	33.15	0.00	0.00	33.23
Total	**3.93**	**0.28**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.15	0.01	0.15	0.01	0.01	0.01	0.00	101.05	101.05	0.00	0.00	101.15
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.15**	**0.01**	**0.15**	**0.01**	**0.01**	**0.01**	**0.00**	**101.05**	**101.05**	**0.00**	**0.00**	**101.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.89					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.28	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.15	33.15	0.00	0.00	33.23
Total	**3.93**	**0.28**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.15	0.01	0.15	0.01	0.01	0.01	0.00	101.05	101.05	0.00	0.00	101.15
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.15**	**0.01**	**0.15**	**0.01**	**0.01**	**0.01**	**0.00**	**101.05**	**101.05**	**0.00**	**0.00**	**101.15**

3.4 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.35
Total	**3.95**	**0.26**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.47	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	99.18	99.18	0.00	0.00	99.27

Total	**0.05**	**0.05**	**0.47**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**99.18**	**99.18**	**0.00**	**0.00**	**99.27**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.35
Total	**3.95**	**0.26**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.47	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	99.18	99.18	0.00	0.00	99.27
Total	**0.05**	**0.05**	**0.47**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**99.18**	**99.18**	**0.00**	**0.00**	**99.27**

3.4 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.34
Total	**3.94**	**0.24**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.34**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.43	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	97.14	97.14	0.00	0.00	97.22
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**97.14**	**97.14**	**0.00**	**0.00**	**97.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.34
Total	**3.94**	**0.24**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.34**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.43	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	97.14	97.14	0.00	0.00	97.22
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**97.14**	**97.14**	**0.00**	**0.00**	**97.22**

3.4 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.46
Total	**3.95**	**0.22**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.46**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.40	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	95.66	95.66	0.00	0.00	95.74
Total	**0.04**	**0.04**	**0.40**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**95.66**	**95.66**	**0.00**	**0.00**	**95.74**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.46
Total	**3.95**	**0.22**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.46**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.40	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	95.66	95.66	0.00	0.00	95.74
Total	**0.04**	**0.04**	**0.40**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**95.66**	**95.66**	**0.00**	**0.00**	**95.74**

3.5 Trenching - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.36	2.24	1.91	0.00		0.13	0.13		0.13	0.13	0.00	353.02	353.02	0.03	0.00	353.64

Total	**0.36**	**2.24**	**1.91**	**0.00**		**0.13**	**0.13**		**0.13**	**0.13**	**0.00**	**353.02**	**353.02**	**0.03**	**0.00**	**353.64**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.36	2.24	1.91	0.00		0.13	0.13		0.13	0.13	0.00	353.02	353.02	0.03	0.00	353.64
Total	**0.36**	**2.24**	**1.91**	**0.00**		**0.13**	**0.13**		**0.13**	**0.13**	**0.00**	**353.02**	**353.02**	**0.03**	**0.00**	**353.64**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.71	4.36	3.34	0.01		0.36	0.36		0.36	0.36	0.00	436.61	436.61	0.06	0.00	437.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.71**	**4.36**	**3.34**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**436.61**	**436.61**	**0.06**	**0.00**	**437.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	19.83	19.83	0.00	0.00	19.85
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**19.83**	**19.83**	**0.00**	**0.00**	**19.85**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.71	4.36	3.34	0.01		0.36	0.36		0.36	0.36	0.00	436.61	436.61	0.06	0.00	437.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.71**	**4.36**	**3.34**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**436.61**	**436.61**	**0.06**	**0.00**	**437.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	19.83	19.83	0.00	0.00	19.85
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**19.83**	**19.83**	**0.00**	**0.00**	**19.85**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 3 Construction 2021-2024

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.1	1000sqft
Apartments Low Rise	81	Dwelling Unit
Single Family Housing	651	Dwelling Unit
Strip Mall	122.956	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading -

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Vehicle Trips - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	7.98	26.17	30.50	0.07	1.77	1.27	3.03	0.10	1.26	1.36	0.00	6,366.37	6,366.37	0.35	0.00	6,373.68
2022	5.53	11.07	16.23	0.04	0.91	0.46	1.38	0.02	0.46	0.47	0.00	3,477.89	3,477.89	0.15	0.00	3,481.07
2023	5.42	10.09	16.05	0.04	0.91	0.40	1.31	0.02	0.39	0.41	0.00	3,470.78	3,470.78	0.14	0.00	3,473.79
2024	5.36	9.32	16.02	0.04	0.92	0.35	1.27	0.02	0.35	0.36	0.00	3,491.06	3,491.06	0.14	0.00	3,493.94
Total	**24.29**	**56.65**	**78.80**	**0.19**	**4.51**	**2.48**	**6.99**	**0.16**	**2.46**	**2.60**	**0.00**	**16,806.10**	**16,806.10**	**0.78**	**0.00**	**16,822.48**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	7.98	26.17	30.50	0.07	1.31	1.27	2.57	0.05	1.26	1.31	0.00	6,366.37	6,366.37	0.35	0.00	6,373.68

2022	5.53	11.07	16.23	0.04	0.91	0.46	1.38	0.02	0.46	0.47	0.00	3,477.89	3,477.89	0.15	0.00	3,481.07
2023	5.42	10.09	16.05	0.04	0.91	0.40	1.31	0.02	0.39	0.41	0.00	3,470.78	3,470.78	0.14	0.00	3,473.79
2024	5.36	9.32	16.02	0.04	0.92	0.35	1.27	0.02	0.35	0.36	0.00	3,491.06	3,491.06	0.14	0.00	3,493.94
Total	**24.29**	**56.65**	**78.80**	**0.19**	**4.05**	**2.48**	**6.53**	**0.11**	**2.46**	**2.55**	**0.00**	**16,806.10**	**16,806.10**	**0.78**	**0.00**	**16,822.48**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.75	0.00	0.75	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.60	9.82	9.56	0.02		0.44	0.44		0.44	0.44	0.00	2,196.09	2,196.09	0.13	0.00	2,198.79
Total	**1.60**	**9.82**	**9.56**	**0.02**	**0.75**	**0.44**	**1.19**	**0.08**	**0.44**	**0.52**	**0.00**	**2,196.09**	**2,196.09**	**0.13**	**0.00**	**2,198.79**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.15	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	36.90	36.90	0.00	0.00	36.93
Total	**0.02**	**0.01**	**0.15**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**36.90**	**36.90**	**0.00**	**0.00**	**36.93**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.29	0.00	0.29	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.60	9.82	9.56	0.02		0.44	0.44		0.44	0.44	0.00	2,196.09	2,196.09	0.13	0.00	2,198.79
Total	**1.60**	**9.82**	**9.56**	**0.02**	**0.29**	**0.44**	**0.73**	**0.03**	**0.44**	**0.47**	**0.00**	**2,196.09**	**2,196.09**	**0.13**	**0.00**	**2,198.79**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.15	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	36.90	36.90	0.00	0.00	36.93
Total	**0.02**	**0.01**	**0.15**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**36.90**	**36.90**	**0.00**	**0.00**	**36.93**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.69	10.12	13.31	0.03		0.45	0.45		0.45	0.45	0.00	2,523.45	2,523.45	0.14	0.00	2,526.30
Total	**1.69**	**10.12**	**13.31**	**0.03**		**0.45**	**0.45**		**0.45**	**0.45**	**0.00**	**2,523.45**	**2,523.45**	**0.14**	**0.00**	**2,526.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.15	1.73	1.05	0.00	0.15	0.05	0.20	0.00	0.05	0.05	0.00	464.78	464.78	0.01	0.00	464.92
Worker	0.17	0.16	1.59	0.01	0.64	0.02	0.66	0.01	0.02	0.03	0.00	398.19	398.19	0.01	0.00	398.50
Total	**0.32**	**1.89**	**2.64**	**0.01**	**0.79**	**0.07**	**0.86**	**0.01**	**0.07**	**0.08**	**0.00**	**862.97**	**862.97**	**0.02**	**0.00**	**863.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.69	10.12	13.31	0.03		0.45	0.45		0.45	0.45	0.00	2,523.45	2,523.45	0.14	0.00	2,526.30
Total	**1.69**	**10.12**	**13.31**	**0.03**		**0.45**	**0.45**		**0.45**	**0.45**	**0.00**	**2,523.45**	**2,523.45**	**0.14**	**0.00**	**2,526.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.15	1.73	1.05	0.00	0.15	0.05	0.20	0.00	0.05	0.05	0.00	464.78	464.78	0.01	0.00	464.92
Worker	0.17	0.16	1.59	0.01	0.64	0.02	0.66	0.01	0.02	0.03	0.00	398.19	398.19	0.01	0.00	398.50
Total	**0.32**	**1.89**	**2.64**	**0.01**	**0.79**	**0.07**	**0.86**	**0.01**	**0.07**	**0.08**	**0.00**	**862.97**	**862.97**	**0.02**	**0.00**	**863.42**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.58	9.09	13.22	0.03		0.38	0.38		0.38	0.38	0.00	2,513.78	2,513.78	0.13	0.00	2,516.44
Total	**1.58**	**9.09**	**13.22**	**0.03**		**0.38**	**0.38**		**0.38**	**0.38**	**0.00**	**2,513.78**	**2,513.78**	**0.13**	**0.00**	**2,516.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.14	1.63	1.01	0.00	0.15	0.05	0.20	0.00	0.04	0.05	0.00	462.79	462.79	0.01	0.00	462.92
Worker	0.16	0.14	1.47	0.01	0.63	0.02	0.66	0.01	0.02	0.03	0.00	390.29	390.29	0.01	0.00	390.59
Total	**0.30**	**1.77**	**2.48**	**0.01**	**0.78**	**0.07**	**0.86**	**0.01**	**0.06**	**0.08**	**0.00**	**853.08**	**853.08**	**0.02**	**0.00**	**853.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.58	9.09	13.22	0.03		0.38	0.38		0.38	0.38	0.00	2,513.78	2,513.78	0.13	0.00	2,516.44
Total	**1.58**	**9.09**	**13.22**	**0.03**		**0.38**	**0.38**		**0.38**	**0.38**	**0.00**	**2,513.78**	**2,513.78**	**0.13**	**0.00**	**2,516.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.14	1.63	1.01	0.00	0.15	0.05	0.20	0.00	0.04	0.05	0.00	462.79	462.79	0.01	0.00	462.92

Worker	0.16	0.14	1.47	0.01	0.63	0.02	0.66	0.01	0.02	0.03	0.00	390.29	390.29	0.01	0.00	390.59
Total	**0.30**	**1.77**	**2.48**	**0.01**	**0.78**	**0.07**	**0.86**	**0.01**	**0.06**	**0.08**	**0.00**	**853.08**	**853.08**	**0.02**	**0.00**	**853.51**

3.3 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.48	8.21	13.19	0.03		0.32	0.32		0.32	0.32	0.00	2,513.78	2,513.78	0.12	0.00	2,516.30
Total	**1.48**	**8.21**	**13.19**	**0.03**		**0.32**	**0.32**		**0.32**	**0.32**	**0.00**	**2,513.78**	**2,513.78**	**0.12**	**0.00**	**2,516.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.13	1.56	0.98	0.00	0.15	0.04	0.20	0.00	0.04	0.04	0.00	462.60	462.60	0.01	0.00	462.73
Worker	0.15	0.13	1.37	0.01	0.63	0.02	0.66	0.01	0.02	0.03	0.00	384.52	384.52	0.01	0.00	384.80
Total	**0.28**	**1.69**	**2.35**	**0.01**	**0.78**	**0.06**	**0.86**	**0.01**	**0.06**	**0.07**	**0.00**	**847.12**	**847.12**	**0.02**	**0.00**	**847.53**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	1.48	8.21	13.19	0.03		0.32	0.32		0.32	0.32	0.00	2,513.78	2,513.78	0.12	0.00	2,516.30
Total	**1.48**	**8.21**	**13.19**	**0.03**		**0.32**	**0.32**		**0.32**	**0.32**	**0.00**	**2,513.78**	**2,513.78**	**0.12**	**0.00**	**2,516.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.13	1.56	0.98	0.00	0.15	0.04	0.20	0.00	0.04	0.04	0.00	462.60	462.60	0.01	0.00	462.73
Worker	0.15	0.13	1.37	0.01	0.63	0.02	0.66	0.01	0.02	0.03	0.00	384.52	384.52	0.01	0.00	384.80
Total	**0.28**	**1.69**	**2.35**	**0.01**	**0.78**	**0.06**	**0.86**	**0.01**	**0.06**	**0.07**	**0.00**	**847.12**	**847.12**	**0.02**	**0.00**	**847.53**

3.3 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.41	7.50	13.27	0.03		0.28	0.28		0.28	0.28	0.00	2,533.12	2,533.12	0.11	0.00	2,535.52
Total	**1.41**	**7.50**	**13.27**	**0.03**		**0.28**	**0.28**		**0.28**	**0.28**	**0.00**	**2,533.12**	**2,533.12**	**0.11**	**0.00**	**2,535.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.13	1.51	0.96	0.00	0.15	0.04	0.20	0.00	0.04	0.04	0.00	466.01	466.01	0.01	0.00	466.13
Worker	0.14	0.12	1.30	0.01	0.64	0.02	0.66	0.01	0.02	0.03	0.00	382.26	382.26	0.01	0.00	382.53
Total	**0.27**	**1.63**	**2.26**	**0.01**	**0.79**	**0.06**	**0.86**	**0.01**	**0.06**	**0.07**	**0.00**	**848.27**	**848.27**	**0.02**	**0.00**	**848.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.41	7.50	13.27	0.03		0.28	0.28		0.28	0.28	0.00	2,533.12	2,533.12	0.11	0.00	2,535.52
Total	**1.41**	**7.50**	**13.27**	**0.03**		**0.28**	**0.28**		**0.28**	**0.28**	**0.00**	**2,533.12**	**2,533.12**	**0.11**	**0.00**	**2,535.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.13	1.51	0.96	0.00	0.15	0.04	0.20	0.00	0.04	0.04	0.00	466.01	466.01	0.01	0.00	466.13
Worker	0.14	0.12	1.30	0.01	0.64	0.02	0.66	0.01	0.02	0.03	0.00	382.26	382.26	0.01	0.00	382.53
Total	**0.27**	**1.63**	**2.26**	**0.01**	**0.79**	**0.06**	**0.86**	**0.01**	**0.06**	**0.07**	**0.00**	**848.27**	**848.27**	**0.02**	**0.00**	**848.66**

3.4 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**3.64**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.32	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	79.45	79.45	0.00	0.00	79.51
Total	**0.03**	**0.03**	**0.32**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**79.45**	**79.45**	**0.00**	**0.00**	**79.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**3.64**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.32	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	79.45	79.45	0.00	0.00	79.51
Total	**0.03**	**0.03**	**0.32**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**79.45**	**79.45**	**0.00**	**0.00**	**79.51**

3.4 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.60					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**3.63**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.03	0.03	0.29	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	77.87	77.87	0.00	0.00	77.93
Total	**0.03**	**0.03**	**0.29**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**77.87**	**77.87**	**0.00**	**0.00**	**77.93**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.60					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**3.63**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.29	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	77.87	77.87	0.00	0.00	77.93
Total	**0.03**	**0.03**	**0.29**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**77.87**	**77.87**	**0.00**	**0.00**	**77.93**

3.4 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	3.60					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**3.62**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.27	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	76.72	76.72	0.00	0.00	76.77
Total	**0.03**	**0.03**	**0.27**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**76.72**	**76.72**	**0.00**	**0.00**	**76.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.60					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**3.62**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.27	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	76.72	76.72	0.00	0.00	76.77
Total	**0.03**	**0.03**	**0.27**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**76.72**	**76.72**	**0.00**	**0.00**	**76.77**

3.4 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.62					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**3.64**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.02	0.26	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	76.27	76.27	0.00	0.00	76.32
Total	**0.03**	**0.02**	**0.26**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**76.27**	**76.27**	**0.00**	**0.00**	**76.32**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.62					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**3.64**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.02	0.26	0.00	0.13	0.00	0.13	0.00	0.00	0.01	0.00	76.27	76.27	0.00	0.00	76.32
Total	**0.03**	**0.02**	**0.26**	**0.00**	**0.13**	**0.00**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**76.27**	**76.27**	**0.00**	**0.00**	**76.32**

3.5 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.80	0.98	0.00		0.04	0.04		0.04	0.04	0.00	181.58	181.58	0.01	0.00	181.83

Total	**0.15**	**0.80**	**0.98**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**181.58**	**181.58**	**0.01**	**0.00**	**181.83**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.77	4.77	0.00	0.00	4.77
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.77**	**4.77**	**0.00**	**0.00**	**4.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.80	0.98	0.00		0.04	0.04		0.04	0.04	0.00	181.58	181.58	0.01	0.00	181.83
Total	**0.15**	**0.80**	**0.98**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**181.58**	**181.58**	**0.01**	**0.00**	**181.83**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.77	4.77	0.00	0.00	4.77
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.77**	**4.77**	**0.00**	**0.00**	**4.77**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.53	3.29	3.21	0.01		0.24	0.24		0.24	0.24	0.00	429.99	429.99	0.04	0.00	430.90
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.53**	**3.29**	**3.21**	**0.01**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**429.99**	**429.99**	**0.04**	**0.00**	**430.90**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.88	17.88	0.00	0.00	17.89
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.88**	**17.88**	**0.00**	**0.00**	**17.89**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.53	3.29	3.21	0.01		0.24	0.24		0.24	0.24	0.00	429.99	429.99	0.04	0.00	430.90
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.53**	**3.29**	**3.21**	**0.01**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**429.99**	**429.99**	**0.04**	**0.00**	**430.90**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.88	17.88	0.00	0.00	17.89
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.88**	**17.88**	**0.00**	**0.00**	**17.89**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.1	1000sqft
Hotel	750	Room
Apartments Low Rise	173	Dwelling Unit
Single Family Housing	1353	Dwelling Unit
Strip Mall	125.06	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	14.00	32.90	52.55	0.13	3.42	1.37	4.79	0.17	1.36	1.53	0.00	11,961.33	11,961.33	0.51	0.00	11,972.06
2026	10.84	16.27	29.47	0.08	2.03	0.59	2.61	0.03	0.58	0.61	0.00	7,008.55	7,008.55	0.25	0.00	7,013.89
2027	10.84	16.27	29.47	0.08	2.03	0.59	2.61	0.03	0.58	0.61	0.00	7,008.55	7,008.55	0.25	0.00	7,013.89
2028	10.80	16.21	29.36	0.08	2.02	0.59	2.60	0.03	0.57	0.61	0.00	6,981.70	6,981.70	0.25	0.00	6,987.02
Total	**46.48**	**81.65**	**140.85**	**0.37**	**9.50**	**3.14**	**12.61**	**0.26**	**3.09**	**3.36**	**0.00**	**32,960.13**	**32,960.13**	**1.26**	**0.00**	**32,986.86**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	14.00	32.90	52.55	0.13	2.67	1.37	4.04	0.09	1.36	1.45	0.00	11,961.33	11,961.33	0.51	0.00	11,972.06
2026	10.84	16.27	29.47	0.08	2.03	0.59	2.61	0.03	0.58	0.61	0.00	7,008.55	7,008.55	0.25	0.00	7,013.89

2027	10.84	16.27	29.47	0.08	2.03	0.59	2.61	0.03	0.58	0.61	0.00	7,008.55	7,008.55	0.25	0.00	7,013.89
2028	10.80	16.21	29.36	0.08	2.02	0.59	2.60	0.03	0.57	0.61	0.00	6,981.70	6,981.70	0.25	0.00	6,987.02
Total	**46.48**	**81.65**	**140.85**	**0.37**	**8.75**	**3.14**	**11.86**	**0.18**	**3.09**	**3.28**	**0.00**	**32,960.13**	**32,960.13**	**1.26**	**0.00**	**32,986.86**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.23	0.00	1.23	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	2.21	11.18	15.46	0.04		0.46	0.46		0.46	0.46	0.00	3,761.45	3,761.45	0.18	0.00	3,765.21
Total	**2.21**	**11.18**	**15.46**	**0.04**	**1.23**	**0.46**	**1.69**	**0.13**	**0.46**	**0.59**	**0.00**	**3,761.45**	**3,761.45**	**0.18**	**0.00**	**3,765.21**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.11	58.11	0.00	0.00	58.15
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.11**	**58.11**	**0.00**	**0.00**	**58.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	2.21	11.18	15.46	0.04		0.46	0.46		0.46	0.46	0.00	3,761.45	3,761.45	0.18	0.00	3,765.21
Total	**2.21**	**11.18**	**15.46**	**0.04**	**0.48**	**0.46**	**0.94**	**0.05**	**0.46**	**0.51**	**0.00**	**3,761.45**	**3,761.45**	**0.18**	**0.00**	**3,765.21**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.11	58.11	0.00	0.00	58.15
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.11**	**58.11**	**0.00**	**0.00**	**58.15**

3.3 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07
Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07
Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

3.3 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07
Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07

Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

3.3 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07
Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07

Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.07	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	983.77	983.77	0.01	0.00	984.02
Worker	0.31	0.25	2.72	0.01	1.42	0.05	1.46	0.02	0.04	0.07	0.00	836.51	836.51	0.03	0.00	837.07
Total	**0.58**	**3.32**	**4.69**	**0.02**	**1.75**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,820.28**	**1,820.28**	**0.04**	**0.00**	**1,821.09**

3.3 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.60	12.70	23.91	0.06		0.44	0.44		0.44	0.44	0.00	4,968.58	4,968.58	0.21	0.00	4,972.94
Total	**2.60**	**12.70**	**23.91**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,968.58**	**4,968.58**	**0.21**	**0.00**	**4,972.94**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.06	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	980.00	980.00	0.01	0.00	980.25
Worker	0.30	0.25	2.71	0.01	1.41	0.05	1.46	0.02	0.04	0.07	0.00	833.30	833.30	0.03	0.00	833.86
Total	**0.57**	**3.31**	**4.68**	**0.02**	**1.74**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,813.30**	**1,813.30**	**0.04**	**0.00**	**1,814.11**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.60	12.70	23.91	0.06		0.44	0.44		0.44	0.44	0.00	4,968.58	4,968.58	0.21	0.00	4,972.94
Total	**2.60**	**12.70**	**23.91**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,968.58**	**4,968.58**	**0.21**	**0.00**	**4,972.94**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.27	3.06	1.97	0.01	0.33	0.08	0.41	0.01	0.08	0.09	0.00	980.00	980.00	0.01	0.00	980.25
Worker	0.30	0.25	2.71	0.01	1.41	0.05	1.46	0.02	0.04	0.07	0.00	833.30	833.30	0.03	0.00	833.86
Total	**0.57**	**3.31**	**4.68**	**0.02**	**1.74**	**0.13**	**1.87**	**0.03**	**0.12**	**0.16**	**0.00**	**1,813.30**	**1,813.30**	**0.04**	**0.00**	**1,814.11**

3.4 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

3.4 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41

Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

3.4 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.58					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**7.60**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	167.30	167.30	0.01	0.00	167.41
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**167.30**	**167.30**	**0.01**	**0.00**	**167.41**

3.4 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.55					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**7.57**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	166.66	166.66	0.01	0.00	166.77
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**166.66**	**166.66**	**0.01**	**0.00**	**166.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.55					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**7.57**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.54	0.00	0.28	0.01	0.29	0.00	0.01	0.01	0.00	166.66	166.66	0.01	0.00	166.77
Total	**0.06**	**0.05**	**0.54**	**0.00**	**0.28**	**0.01**	**0.29**	**0.00**	**0.01**	**0.01**	**0.00**	**166.66**	**166.66**	**0.01**	**0.00**	**166.77**

3.5 Trenching - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40

Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40
Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 5 Construction 2029-2032

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.1	1000sqft
Apartments Low Rise	174	Dwelling Unit
Single Family Housing	1367	Dwelling Unit
Strip Mall	65.78	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2029	13.03	32.08	51.42	0.13	2.97	1.34	4.31	0.16	1.33	1.49	0.00	11,504.09	11,504.09	0.50	0.00	11,514.63
2030	9.37	11.21	27.51	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,487.75	6,487.75	0.21	0.00	6,492.11
2031	9.37	11.21	27.51	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,487.75	6,487.75	0.21	0.00	6,492.11
2032	9.41	11.25	27.62	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,512.60	6,512.60	0.21	0.00	6,516.98
Total	**41.18**	**65.75**	**134.06**	**0.34**	**7.68**	**2.30**	**9.98**	**0.25**	**2.26**	**2.51**	**0.00**	**30,992.19**	**30,992.19**	**1.13**	**0.00**	**31,015.83**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2029	13.03	32.08	51.42	0.13	2.21	1.34	3.55	0.08	1.33	1.41	0.00	11,504.09	11,504.09	0.50	0.00	11,514.63
2030	9.37	11.21	27.51	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,487.75	6,487.75	0.21	0.00	6,492.11

2031	9.37	11.21	27.51	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,487.75	6,487.75	0.21	0.00	6,492.11
2032	9.41	11.25	27.62	0.07	1.57	0.32	1.89	0.03	0.31	0.34	0.00	6,512.60	6,512.60	0.21	0.00	6,516.98
Total	**41.18**	**65.75**	**134.06**	**0.34**	**6.92**	**2.30**	**9.22**	**0.17**	**2.26**	**2.43**	**0.00**	**30,992.19**	**30,992.19**	**1.13**	**0.00**	**31,015.83**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.24	0.00	1.24	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	2.22	11.27	15.58	0.04		0.46	0.46		0.46	0.46	0.00	3,790.61	3,790.61	0.18	0.00	3,794.40
Total	**2.22**	**11.27**	**15.58**	**0.04**	**1.24**	**0.46**	**1.70**	**0.13**	**0.46**	**0.59**	**0.00**	**3,790.61**	**3,790.61**	**0.18**	**0.00**	**3,794.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.56	58.56	0.00	0.00	58.60
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.56**	**58.56**	**0.00**	**0.00**	**58.60**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	2.22	11.27	15.58	0.04		0.46	0.46		0.46	0.46	0.00	3,790.61	3,790.61	0.18	0.00	3,794.40
Total	**2.22**	**11.27**	**15.58**	**0.04**	**0.48**	**0.46**	**0.94**	**0.05**	**0.46**	**0.51**	**0.00**	**3,790.61**	**3,790.61**	**0.18**	**0.00**	**3,794.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.56	58.56	0.00	0.00	58.60
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.56**	**58.56**	**0.00**	**0.00**	**58.60**

3.3 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.19	2.24	1.44	0.01	0.24	0.06	0.30	0.01	0.06	0.06	0.00	715.77	715.77	0.01	0.00	715.95
Worker	0.24	0.20	2.13	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	653.83	653.83	0.02	0.00	654.27
Total	**0.43**	**2.44**	**3.57**	**0.02**	**1.35**	**0.10**	**1.44**	**0.03**	**0.09**	**0.11**	**0.00**	**1,369.60**	**1,369.60**	**0.03**	**0.00**	**1,370.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.19	2.24	1.44	0.01	0.24	0.06	0.30	0.01	0.06	0.06	0.00	715.77	715.77	0.01	0.00	715.95
Worker	0.24	0.20	2.13	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	653.83	653.83	0.02	0.00	654.27
Total	**0.43**	**2.44**	**3.57**	**0.02**	**1.35**	**0.10**	**1.44**	**0.03**	**0.09**	**0.11**	**0.00**	**1,369.60**	**1,369.60**	**0.03**	**0.00**	**1,370.22**

3.3 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.02	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	715.12	715.12	0.01	0.00	715.28
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	626.09	626.09	0.02	0.00	626.46
Total	**0.38**	**2.17**	**3.05**	**0.02**	**1.35**	**0.09**	**1.43**	**0.03**	**0.08**	**0.11**	**0.00**	**1,341.21**	**1,341.21**	**0.03**	**0.00**	**1,341.74**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.02	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	715.12	715.12	0.01	0.00	715.28
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	626.09	626.09	0.02	0.00	626.46

Total	**0.38**	**2.17**	**3.05**	**0.02**	**1.35**	**0.09**	**1.43**	**0.03**	**0.08**	**0.11**	**0.00**	**1,341.21**	**1,341.21**	**0.03**	**0.00**	**1,341.74**

3.3 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.02	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	715.12	715.12	0.01	0.00	715.28
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	626.09	626.09	0.02	0.00	626.46
Total	**0.38**	**2.17**	**3.05**	**0.02**	**1.35**	**0.09**	**1.43**	**0.03**	**0.08**	**0.11**	**0.00**	**1,341.21**	**1,341.21**	**0.03**	**0.00**	**1,341.74**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42

Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.02	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	715.12	715.12	0.01	0.00	715.28
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.14	0.02	0.03	0.05	0.00	626.09	626.09	0.02	0.00	626.46
Total	**0.38**	**2.17**	**3.05**	**0.02**	**1.35**	**0.09**	**1.43**	**0.03**	**0.08**	**0.11**	**0.00**	**1,341.21**	**1,341.21**	**0.03**	**0.00**	**1,341.74**

3.3 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.21	8.93	23.98	0.06		0.22	0.22		0.22	0.22	0.00	5,006.80	5,006.80	0.18	0.00	5,010.55
Total	**2.21**	**8.93**	**23.98**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**5,006.80**	**5,006.80**	**0.18**	**0.00**	**5,010.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.03	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	717.86	717.86	0.01	0.00	718.02
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.15	0.02	0.03	0.05	0.00	628.49	628.49	0.02	0.00	628.86
Total	**0.38**	**2.18**	**3.05**	**0.02**	**1.35**	**0.09**	**1.44**	**0.03**	**0.08**	**0.11**	**0.00**	**1,346.35**	**1,346.35**	**0.03**	**0.00**	**1,346.88**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.21	8.93	23.98	0.06		0.22	0.22		0.22	0.22	0.00	5,006.80	5,006.80	0.18	0.00	5,010.55
Total	**2.21**	**8.93**	**23.98**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**5,006.80**	**5,006.80**	**0.18**	**0.00**	**5,010.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.03	1.34	0.01	0.24	0.05	0.29	0.01	0.05	0.06	0.00	717.86	717.86	0.01	0.00	718.02
Worker	0.20	0.15	1.71	0.01	1.11	0.04	1.15	0.02	0.03	0.05	0.00	628.49	628.49	0.02	0.00	628.86
Total	**0.38**	**2.18**	**3.05**	**0.02**	**1.35**	**0.09**	**1.44**	**0.03**	**0.08**	**0.11**	**0.00**	**1,346.35**	**1,346.35**	**0.03**	**0.00**	**1,346.88**

3.4 Architectural Coating - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**6.76**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.43	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	131.13	131.13	0.00	0.00	131.22
Total	**0.05**	**0.04**	**0.43**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**131.13**	**131.13**	**0.00**	**0.00**	**131.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**6.76**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.43	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	131.13	131.13	0.00	0.00	131.22
Total	**0.05**	**0.04**	**0.43**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**131.13**	**131.13**	**0.00**	**0.00**	**131.22**

3.4 Architectural Coating - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**6.76**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	125.56	125.56	0.00	0.00	125.64

Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**125.56**	**125.56**	**0.00**	**0.00**	**125.64**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**6.76**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	125.56	125.56	0.00	0.00	125.64
Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**125.56**	**125.56**	**0.00**	**0.00**	**125.64**

3.4 Architectural Coating - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**6.76**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	125.56	125.56	0.00	0.00	125.64
Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**125.56**	**125.56**	**0.00**	**0.00**	**125.64**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.74					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**6.76**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	125.56	125.56	0.00	0.00	125.64
Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**125.56**	**125.56**	**0.00**	**0.00**	**125.64**

3.4 Architectural Coating - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.77					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**6.79**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	126.05	126.05	0.00	0.00	126.12
Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**126.05**	**126.05**	**0.00**	**0.00**	**126.12**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.77					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**6.79**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.03	0.34	0.00	0.22	0.01	0.23	0.00	0.01	0.01	0.00	126.05	126.05	0.00	0.00	126.12
Total	**0.04**	**0.03**	**0.34**	**0.00**	**0.22**	**0.01**	**0.23**	**0.00**	**0.01**	**0.01**	**0.00**	**126.05**	**126.05**	**0.00**	**0.00**	**126.12**

3.5 Trenching - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40

Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40
Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

3.6 Paving - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 6 Construction 2033-2036

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.1	1000sqft
Single Family Housing	37	Dwelling Unit
Strip Mall	65.78	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2033	1.37	2.81	5.66	0.02	0.44	0.09	0.53	0.02	0.09	0.11	0.00	1,508.60	1,508.60	0.05	0.00	1,509.67
2034	1.06	1.60	3.01	0.01	0.28	0.05	0.33	0.01	0.05	0.05	0.00	887.20	887.20	0.03	0.00	887.74
2035	1.04	1.41	2.96	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	887.78	887.78	0.02	0.00	888.28
2036	1.05	1.41	2.97	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	891.18	891.18	0.02	0.00	891.69
Total	**4.52**	**7.23**	**14.60**	**0.05**	**1.28**	**0.22**	**1.50**	**0.05**	**0.22**	**0.24**	**0.00**	**4,174.76**	**4,174.76**	**0.12**	**0.00**	**4,177.38**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2033	1.37	2.81	5.66	0.02	0.35	0.09	0.45	0.01	0.09	0.10	0.00	1,508.60	1,508.60	0.05	0.00	1,509.67
2034	1.06	1.60	3.01	0.01	0.28	0.05	0.33	0.01	0.05	0.05	0.00	887.20	887.20	0.03	0.00	887.74
2035	1.04	1.41	2.96	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	887.78	887.78	0.02	0.00	888.28

2036	1.05	1.41	2.97	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	891.18	891.18	0.02	0.00	891.69
Total	**4.52**	**7.23**	**14.60**	**0.05**	**1.19**	**0.22**	**1.42**	**0.04**	**0.22**	**0.23**	**0.00**	**4,174.76**	**4,174.76**	**0.12**	**0.00**	**4,177.38**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.14	0.00	0.14	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.21	0.78	1.74	0.00		0.03	0.03		0.03	0.03	0.00	442.58	442.58	0.02	0.00	442.94

Total	**0.21**	**0.78**	**1.74**	**0.00**	**0.14**	**0.03**	**0.17**	**0.01**	**0.03**	**0.04**	**0.00**	**442.58**	**442.58**	**0.02**	**0.00**	**442.94**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.42	6.42	0.00	0.00	6.42
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**6.42**	**6.42**	**0.00**	**0.00**	**6.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.05	0.00	0.05	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.21	0.78	1.74	0.00		0.03	0.03		0.03	0.03	0.00	442.58	442.58	0.02	0.00	442.94
Total	**0.21**	**0.78**	**1.74**	**0.00**	**0.05**	**0.03**	**0.08**	**0.01**	**0.03**	**0.04**	**0.00**	**442.58**	**442.58**	**0.02**	**0.00**	**442.94**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.42	6.42	0.00	0.00	6.42
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**6.42**	**6.42**	**0.00**	**0.00**	**6.42**

3.3 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.24	0.93	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.42
Total	**0.24**	**0.93**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.05	0.53	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.67	188.67	0.00	0.00	188.71
Worker	0.03	0.02	0.28	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	102.65	102.65	0.00	0.00	102.71
Total	**0.08**	**0.55**	**0.63**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.32**	**291.32**	**0.00**	**0.00**	**291.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.24	0.93	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.42
Total	**0.24**	**0.93**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.05	0.53	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.67	188.67	0.00	0.00	188.71
Worker	0.03	0.02	0.28	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	102.65	102.65	0.00	0.00	102.71
Total	**0.08**	**0.55**	**0.63**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.32**	**291.32**	**0.00**	**0.00**	**291.42**

3.3 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.24	0.93	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.42
Total	**0.24**	**0.93**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.05	0.53	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.67	188.67	0.00	0.00	188.71
Worker	0.03	0.02	0.28	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	102.65	102.65	0.00	0.00	102.71
Total	**0.08**	**0.55**	**0.63**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.32**	**291.32**	**0.00**	**0.00**	**291.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.24	0.93	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.42
Total	**0.24**	**0.93**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.05	0.53	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.67	188.67	0.00	0.00	188.71
Worker	0.03	0.02	0.28	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	102.65	102.65	0.00	0.00	102.71
Total	**0.08**	**0.55**	**0.63**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.32**	**291.32**	**0.00**	**0.00**	**291.42**

3.3 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82
Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82
Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

3.3 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.78	2.10	0.01		0.02	0.02		0.02	0.02	0.00	546.19	546.19	0.02	0.00	546.56
Total	**0.22**	**0.78**	**2.10**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**546.19**	**546.19**	**0.02**	**0.00**	**546.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.04	0.52	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	190.02	190.02	0.00	0.00	190.07
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	101.16	101.16	0.00	0.00	101.21
Total	**0.07**	**0.54**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.18**	**291.18**	**0.00**	**0.00**	**291.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.78	2.10	0.01		0.02	0.02		0.02	0.02	0.00	546.19	546.19	0.02	0.00	546.56
Total	**0.22**	**0.78**	**2.10**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**546.19**	**546.19**	**0.02**	**0.00**	**546.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.52	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	190.02	190.02	0.00	0.00	190.07
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	101.16	101.16	0.00	0.00	101.21
Total	**0.07**	**0.54**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**291.18**	**291.18**	**0.00**	**0.00**	**291.28**

3.4 Architectural Coating - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.70	20.70	0.00	0.00	20.72
Total	**0.01**	**0.00**	**0.06**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.70**	**20.70**	**0.00**	**0.00**	**20.72**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.70	20.70	0.00	0.00	20.72
Total	**0.01**	**0.00**	**0.06**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.70**	**20.70**	**0.00**	**0.00**	**20.72**

3.4 Architectural Coating - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.70	20.70	0.00	0.00	20.72
Total	**0.01**	**0.00**	**0.06**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.70**	**20.70**	**0.00**	**0.00**	**20.72**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.70	20.70	0.00	0.00	20.72
Total	**0.01**	**0.00**	**0.06**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.70**	**20.70**	**0.00**	**0.00**	**20.72**

3.4 Architectural Coating - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

3.4 Architectural Coating - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.40	20.40	0.00	0.00	20.41
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.40**	**20.40**	**0.00**	**0.00**	**20.41**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.40	20.40	0.00	0.00	20.41
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.40**	**20.40**	**0.00**	**0.00**	**20.41**

3.5 Trenching - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.23	0.56	0.00		0.01	0.01		0.01	0.01	0.00	124.19	124.19	0.00	0.00	124.29
Total	**0.06**	**0.23**	**0.56**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**124.19**	**124.19**	**0.00**	**0.00**	**124.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	2.80	2.80	0.00	0.00	2.81
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**2.80**	**2.80**	**0.00**	**0.00**	**2.81**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.23	0.56	0.00		0.01	0.01		0.01	0.01	0.00	124.19	124.19	0.00	0.00	124.29
Total	**0.06**	**0.23**	**0.56**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**124.19**	**124.19**	**0.00**	**0.00**	**124.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	2.80	2.80	0.00	0.00	2.81
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**2.80**	**2.80**	**0.00**	**0.00**	**2.81**

3.6 Paving - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.19	0.32	0.00		0.01	0.01		0.01	0.01	0.00	43.66	43.66	0.00	0.00	43.71
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.19**	**0.32**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**43.66**	**43.66**	**0.00**	**0.00**	**43.71**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	1.75	0.00	0.00	1.75
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.75**	**1.75**	**0.00**	**0.00**	**1.75**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.03	0.19	0.32	0.00		0.01	0.01		0.01	0.01	0.00	43.66	43.66	0.00	0.00	43.71
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.19**	**0.32**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**43.66**	**43.66**	**0.00**	**0.00**	**43.71**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	1.75	0.00	0.00	1.75
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.75**	**1.75**	**0.00**	**0.00**	**1.75**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 7 Construction 2037-2040

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.1	1000sqft
Single Family Housing	37	Dwelling Unit
Strip Mall	65.78	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT -

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2037	1.32	2.32	5.58	0.02	0.43	0.07	0.50	0.02	0.06	0.08	0.00	1,507.47	1,507.47	0.05	0.00	1,508.44
2038	1.04	1.41	2.96	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	887.78	887.78	0.02	0.00	888.28
2039	1.04	1.40	2.95	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	884.38	884.38	0.02	0.00	884.88
2040	0.96	1.02	2.26	0.01	0.22	0.03	0.25	0.00	0.03	0.03	0.00	675.64	675.64	0.02	0.00	676.02
Total	**4.36**	**6.15**	**13.75**	**0.05**	**1.21**	**0.18**	**1.39**	**0.04**	**0.17**	**0.19**	**0.00**	**3,955.27**	**3,955.27**	**0.11**	**0.00**	**3,957.62**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2037	1.32	2.32	5.58	0.02	0.35	0.07	0.42	0.01	0.06	0.08	0.00	1,507.47	1,507.47	0.05	0.00	1,508.44
2038	1.04	1.41	2.96	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	887.78	887.78	0.02	0.00	888.28

2039	1.04	1.40	2.95	0.01	0.28	0.04	0.32	0.01	0.04	0.04	0.00	884.38	884.38	0.02	0.00	884.88
2040	0.96	1.02	2.26	0.01	0.22	0.03	0.25	0.00	0.03	0.03	0.00	675.64	675.64	0.02	0.00	676.02
Total	**4.36**	**6.15**	**13.75**	**0.05**	**1.13**	**0.18**	**1.31**	**0.03**	**0.17**	**0.19**	**0.00**	**3,955.27**	**3,955.27**	**0.11**	**0.00**	**3,957.62**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.14	0.00	0.14	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	0.19	0.56	1.72	0.00		0.02	0.02		0.02	0.02	0.00	442.58	442.58	0.02	0.00	442.90
Total	**0.19**	**0.56**	**1.72**	**0.00**	**0.14**	**0.02**	**0.16**	**0.01**	**0.02**	**0.03**	**0.00**	**442.58**	**442.58**	**0.02**	**0.00**	**442.90**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.28	6.28	0.00	0.00	6.28
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**6.28**	**6.28**	**0.00**	**0.00**	**6.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.05	0.00	0.05	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.19	0.56	1.72	0.00		0.02	0.02		0.02	0.02	0.00	442.58	442.58	0.02	0.00	442.90
Total	**0.19**	**0.56**	**1.72**	**0.00**	**0.05**	**0.02**	**0.07**	**0.01**	**0.02**	**0.03**	**0.00**	**442.58**	**442.58**	**0.02**	**0.00**	**442.90**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.28	6.28	0.00	0.00	6.28
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**6.28**	**6.28**	**0.00**	**0.00**	**6.28**

3.3 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82
Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82
Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

3.3 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82
Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.09	0.01		0.02	0.02		0.02	0.02	0.00	544.10	544.10	0.02	0.00	544.48
Total	**0.22**	**0.77**	**2.09**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**544.10**	**544.10**	**0.02**	**0.00**	**544.48**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.35	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	189.30	189.30	0.00	0.00	189.34
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.77	100.77	0.00	0.00	100.82

Total	**0.07**	**0.53**	**0.59**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**290.07**	**290.07**	**0.00**	**0.00**	**290.16**

3.3 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.39
Total	**0.22**	**0.77**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.39**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.34	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.57	188.57	0.00	0.00	188.62
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.38	100.38	0.00	0.00	100.44
Total	**0.07**	**0.53**	**0.58**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**288.95**	**288.95**	**0.00**	**0.00**	**289.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	0.77	2.08	0.01		0.02	0.02		0.02	0.02	0.00	542.02	542.02	0.02	0.00	542.39

Total	**0.22**	**0.77**	**2.08**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**542.02**	**542.02**	**0.02**	**0.00**	**542.39**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.34	0.00	0.06	0.01	0.08	0.00	0.01	0.01	0.00	188.57	188.57	0.00	0.00	188.62
Worker	0.03	0.02	0.24	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	100.38	100.38	0.00	0.00	100.44
Total	**0.07**	**0.53**	**0.58**	**0.00**	**0.24**	**0.02**	**0.27**	**0.00**	**0.02**	**0.02**	**0.00**	**288.95**	**288.95**	**0.00**	**0.00**	**289.06**

3.3 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	0.53	1.56	0.00		0.01	0.01		0.01	0.01	0.00	406.51	406.51	0.01	0.00	406.79
Total	**0.16**	**0.53**	**1.56**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**406.51**	**406.51**	**0.01**	**0.00**	**406.79**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.38	0.26	0.00	0.05	0.01	0.06	0.00	0.01	0.01	0.00	141.39	141.39	0.00	0.00	141.42
Worker	0.02	0.01	0.17	0.00	0.14	0.00	0.14	0.00	0.00	0.01	0.00	74.38	74.38	0.00	0.00	74.41
Total	**0.05**	**0.39**	**0.43**	**0.00**	**0.19**	**0.01**	**0.20**	**0.00**	**0.01**	**0.02**	**0.00**	**215.77**	**215.77**	**0.00**	**0.00**	**215.83**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	0.53	1.56	0.00		0.01	0.01		0.01	0.01	0.00	406.51	406.51	0.01	0.00	406.79
Total	**0.16**	**0.53**	**1.56**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**406.51**	**406.51**	**0.01**	**0.00**	**406.79**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.38	0.26	0.00	0.05	0.01	0.06	0.00	0.01	0.01	0.00	141.39	141.39	0.00	0.00	141.42
Worker	0.02	0.01	0.17	0.00	0.14	0.00	0.14	0.00	0.00	0.01	0.00	74.38	74.38	0.00	0.00	74.41
Total	**0.05**	**0.39**	**0.43**	**0.00**	**0.19**	**0.01**	**0.20**	**0.00**	**0.01**	**0.02**	**0.00**	**215.77**	**215.77**	**0.00**	**0.00**	**215.83**

3.4 Architectural Coating - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

3.4 Architectural Coating - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33

Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.32	20.32	0.00	0.00	20.33
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.32**	**20.32**	**0.00**	**0.00**	**20.33**

3.4 Architectural Coating - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.25	20.25	0.00	0.00	20.26
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.25**	**20.25**	**0.00**	**0.00**	**20.26**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**0.75**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.25	20.25	0.00	0.00	20.26
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.25**	**20.25**	**0.00**	**0.00**	**20.26**

3.4 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**0.74**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.08	20.08	0.00	0.00	20.09
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.08**	**20.08**	**0.00**	**0.00**	**20.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.73					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**0.74**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.08	20.08	0.00	0.00	20.09
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.08**	**20.08**	**0.00**	**0.00**	**20.09**

3.5 Trenching - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.19	0.57	0.00		0.00	0.00		0.00	0.00	0.00	126.10	126.10	0.00	0.00	126.19

Total	**0.06**	**0.19**	**0.57**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**126.10**	**126.10**	**0.00**	**0.00**	**126.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.05
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**	**0.05**	**0.00**	**0.00**	**0.05**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.19	0.57	0.00		0.00	0.00		0.00	0.00	0.00	126.10	126.10	0.00	0.00	126.19
Total	**0.06**	**0.19**	**0.57**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**126.10**	**126.10**	**0.00**	**0.00**	**126.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.05
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**	**0.05**	**0.00**	**0.00**	**0.05**

3.6 Paving - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.16	0.31	0.00		0.00	0.00		0.00	0.00	0.00	43.00	43.00	0.00	0.00	43.04
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.16**	**0.31**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**43.00**	**43.00**	**0.00**	**0.00**	**43.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.69	0.00	0.00	1.69
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.69**	**1.69**	**0.00**	**0.00**	**1.69**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.16	0.31	0.00		0.00	0.00		0.00	0.00	0.00	43.00	43.00	0.00	0.00	43.04
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.16**	**0.31**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**43.00**	**43.00**	**0.00**	**0.00**	**43.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.69	0.00	0.00	1.69
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.69**	**1.69**	**0.00**	**0.00**	**1.69**

CalEEMod Operation Emissions for the Proposed TU MSHCP Alternative and Condor HCP Alternative

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 1 Operation 2017

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	175	1000sqft
Apartments Low Rise	33	Dwelling Unit
Single Family Housing	250	Dwelling Unit
Strip Mall	15.111	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Energy	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	1,457.04	1,457.04	0.05	0.03	1,466.04
Mobile	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Waste						0.00	0.00		0.00	0.00	268.29	0.00	268.29	15.86	0.00	601.26
Water						0.00	0.00		0.00	0.00	0.00	66.07	66.07	0.42	0.02	82.30
Total	**19.16**	**103.17**	**130.59**	**0.31**	**25.64**	**3.80**	**29.51**	**1.26**	**3.80**	**5.13**	**268.29**	**34,226.22**	**34,494.51**	**17.22**	**0.05**	**34,871.92**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Energy	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	1,457.04	1,457.04	0.05	0.03	1,466.04
Mobile	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Waste						0.00	0.00		0.00	0.00	268.29	0.00	268.29	15.86	0.00	601.26
Water						0.00	0.00		0.00	0.00	0.00	66.07	66.07	0.42	0.02	82.30
Total	**19.16**	**103.17**	**130.59**	**0.31**	**25.64**	**3.80**	**29.51**	**1.26**	**3.80**	**5.13**	**268.29**	**34,226.22**	**34,494.51**	**17.22**	**0.05**	**34,871.92**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Unmitigated	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	219.45	219.45	219.45	2,300,538	2,300,538
Racquet Club	985.25	985.25	985.25	10,328,573	10,328,573
Single Family Housing	2,392.50	2,392.50	2392.50	25,081,056	25,081,056
Strip Mall	870.54	870.54	870.54	9,126,094	9,126,094
Total	4,467.74	4,467.74	4,467.74	46,836,261	46,836,261

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	735.87	735.87	0.03	0.01	740.48
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	735.87	735.87	0.03	0.01	740.48

NaturalGas Mitigated	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	721.17	721.17	0.01	0.01	725.56
NaturalGas Unmitigated	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	721.17	721.17	0.01	0.01	725.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	9.5587e+006	0.05	0.44	0.19	0.00		0.00	0.04		0.00	0.04	0.00	510.09	510.09	0.01	0.01	513.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.07**	**0.63**	**0.34**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**721.17**	**721.17**	**0.01**	**0.01**	**725.56**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	9.5587e+006	0.05	0.44	0.19	0.00		0.00	0.04		0.00	0.04	0.00	510.09	510.09	0.01	0.01	513.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.07**	**0.63**	**0.34**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**721.17**	**721.17**	**0.01**	**0.01**	**725.56**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.74076e+006					506.41	0.02	0.01	509.58
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**735.87**	**0.03**	**0.01**	**740.48**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.74076e+006					506.41	0.02	0.01	509.58
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**735.87**	**0.03**	**0.01**	**740.48**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Unmitigated	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.59					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.63					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	122.60	122.60	0.00	0.00	123.34
Landscaping	0.07	0.02	2.15	0.00		0.00	0.01		0.00	0.01	0.00	3.47	3.47	0.00	0.00	3.54
Total	**3.30**	**0.02**	**2.15**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**126.07**	**126.07**	**0.00**	**0.00**	**126.88**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.59					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.63					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	122.60	122.60	0.00	0.00	123.34
Landscaping	0.07	0.02	2.15	0.00		0.00	0.01		0.00	0.01	0.00	3.47	3.47	0.00	0.00	3.54
Total	**3.30**	**0.02**	**2.15**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**126.07**	**126.07**	**0.00**	**0.00**	**126.88**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					66.07	0.42	0.02	82.30
Unmitigated					66.07	0.42	0.02	82.30
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			

Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	16.2885 / 10.2688					36.10	0.37	0.01	47.91
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**66.07**	**0.42**	**0.02**	**82.29**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	16.2885 / 10.2688					36.10	0.37	0.01	47.91
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**66.07**	**0.42**	**0.02**	**82.29**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					268.29	15.86	0.00	601.26
Unmitigated					268.29	15.86	0.00	601.26
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78
Single Family Housing	293.15					59.51	3.52	0.00	133.36
Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**268.29**	**15.86**	**0.00**	**601.27**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78
Single Family Housing	293.15					59.51	3.52	0.00	133.36

Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**268.29**	**15.86**	**0.00**	**601.27**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 2 Operation 2021

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	350	1000sqft
Apartments Low Rise	99	Dwelling Unit
Single Family Housing	757	Dwelling Unit
Strip Mall	91.696	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Energy	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	4,269.71	4,269.71	0.14	0.08	4,296.10
Mobile	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Waste						0.00	0.00		0.00	0.00	613.94	0.00	613.94	36.28	0.00	1,375.88
Water						0.00	0.00		0.00	0.00	0.00	184.03	184.03	1.27	0.07	231.32
Total	**50.59**	**239.48**	**338.27**	**1.05**	**87.01**	**8.70**	**95.92**	**1.72**	**8.22**	**10.14**	**613.94**	**108,070.52**	**108,684.46**	**39.99**	**0.16**	**109,570.49**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Energy	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	4,269.71	4,269.71	0.14	0.08	4,296.10
Mobile	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Waste						0.00	0.00		0.00	0.00	613.94	0.00	613.94	36.28	0.00	1,375.88
Water						0.00	0.00		0.00	0.00	0.00	184.03	184.03	1.27	0.07	231.32
Total	**50.59**	**239.48**	**338.27**	**1.05**	**87.01**	**8.70**	**95.92**	**1.72**	**8.22**	**10.14**	**613.94**	**108,070.52**	**108,684.46**	**39.99**	**0.16**	**109,570.49**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Unmitigated	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	658.35	658.35	658.35	6,901,615	6,901,615
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Single Family Housing	7,244.49	7,244.49	7244.49	75,945,438	75,945,438
Strip Mall	5,282.61	5,282.61	5282.61	55,378,621	55,378,621
Total	15,155.95	15,155.95	15,155.95	158,882,819	158,882,819

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,242.09	2,242.09	0.10	0.04	2,256.14
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,242.09	2,242.09	0.10	0.04	2,256.14

NaturalGas Mitigated	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	2,027.62	2,027.62	0.04	0.04	2,039.96
NaturalGas Unmitigated	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	2,027.62	2,027.62	0.04	0.04	2,039.96
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.89437e+007	0.16	1.33	0.57	0.01		0.00	0.11		0.00	0.11	0.00	1,544.55	1,544.55	0.03	0.03	1,553.95
Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.20**	**1.77**	**0.89**	**0.01**		**0.00**	**0.14**		**0.00**	**0.14**	**0.00**	**2,027.63**	**2,027.63**	**0.04**	**0.04**	**2,039.97**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.89437e+007	0.16	1.33	0.57	0.01		0.00	0.11		0.00	0.11	0.00	1,544.55	1,544.55	0.03	0.03	1,553.95
Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.20**	**1.77**	**0.89**	**0.01**		**0.00**	**0.14**		**0.00**	**0.14**	**0.00**	**2,027.63**	**2,027.63**	**0.04**	**0.04**	**2,039.97**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	5.27103e+006					1,533.40	0.07	0.03	1,543.01
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,242.09**	**0.10**	**0.04**	**2,256.14**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	5.27103e+006					1,533.40	0.07	0.03	1,543.01
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,242.09**	**0.10**	**0.04**	**2,256.14**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Unmitigated	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.04	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	370.83	370.83	0.01	0.01	373.08
Landscaping	0.20	0.07	6.44	0.00		0.00	0.04		0.00	0.04	0.00	10.50	10.50	0.01	0.00	10.71
Total	**9.35**	**0.07**	**6.44**	**0.00**		**0.00**	**0.07**		**0.00**	**0.07**	**0.00**	**381.33**	**381.33**	**0.02**	**0.01**	**383.79**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	1.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.04	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	370.83	370.83	0.01	0.01	373.08
Landscaping	0.20	0.07	6.44	0.00		0.00	0.04		0.00	0.04	0.00	10.50	10.50	0.01	0.00	10.71
Total	**9.35**	**0.07**	**6.44**	**0.00**		**0.00**	**0.07**		**0.00**	**0.07**	**0.00**	**381.33**	**381.33**	**0.02**	**0.01**	**383.79**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					184.03	1.27	0.07	231.32
Unmitigated					184.03	1.27	0.07	231.32
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			

Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	49.3216 / 31.0941					109.30	1.13	0.04	145.08
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**184.02**	**1.28**	**0.08**	**231.32**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	49.3216 / 31.0941					109.30	1.13	0.04	145.08
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**184.02**	**1.28**	**0.08**	**231.32**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					613.94	36.28	0.00	1,375.88
Unmitigated					613.94	36.28	0.00	1,375.88
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	887.65					180.18	10.65	0.00	403.81
Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**613.94**	**36.29**	**0.00**	**1,375.89**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	887.65					180.18	10.65	0.00	403.81

Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**613.94**	**36.29**	**0.00**	**1,375.89**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 3 Operation 2025

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.102	1000sqft
Racquet Club	350	1000sqft
Apartments Low Rise	149	Dwelling Unit
Single Family Housing	1172	Dwelling Unit
Regional Shopping Center	65.776	1000sqft
Strip Mall	96.112	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	14.86	0.11	9.91	0.00		0.00	0.09		0.00	0.09	0.00	588.47	588.47	0.03	0.01	592.28
Energy	0.32	2.81	1.44	0.02		0.00	0.22		0.00	0.22	0.00	7,448.15	7,448.15	0.25	0.13	7,494.24
Mobile	58.21	308.75	465.86	1.73	146.00	12.19	158.18	2.87	11.03	13.90	0.00	168,886.21	168,886.21	3.28	0.00	168,955.09
Waste						0.00	0.00		0.00	0.00	782.03	0.00	782.03	46.22	0.00	1,752.58
Water						0.00	0.00		0.00	0.00	0.00	365.38	365.38	1.97	0.13	447.56
Total	**73.39**	**311.67**	**477.21**	**1.75**	**146.00**	**12.19**	**158.49**	**2.87**	**11.03**	**14.21**	**782.03**	**177,288.21**	**178,070.24**	**51.75**	**0.27**	**179,241.75**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	14.86	0.11	9.91	0.00		0.00	0.09		0.00	0.09	0.00	588.47	588.47	0.03	0.01	592.28
Energy	0.32	2.81	1.44	0.02		0.00	0.22		0.00	0.22	0.00	7,448.15	7,448.15	0.25	0.13	7,494.24
Mobile	58.21	308.75	465.86	1.73	146.00	12.19	158.18	2.87	11.03	13.90	0.00	168,886.21	168,886.21	3.28	0.00	168,955.09
Waste						0.00	0.00		0.00	0.00	782.03	0.00	782.03	46.22	0.00	1,752.58
Water						0.00	0.00		0.00	0.00	0.00	365.38	365.38	1.97	0.13	447.56
Total	**73.39**	**311.67**	**477.21**	**1.75**	**146.00**	**12.19**	**158.49**	**2.87**	**11.03**	**14.21**	**782.03**	**177,288.21**	**178,070.24**	**51.75**	**0.27**	**179,241.75**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	58.21	308.75	465.86	1.73	146.00	12.19	158.18	2.87	11.03	13.90	0.00	168,886.21	168,886.21	3.28	0.00	168,955.09
Unmitigated	58.21	308.75	465.86	1.73	146.00	12.19	158.18	2.87	11.03	13.90	0.00	168,886.21	168,886.21	3.28	0.00	168,955.09
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	990.85	990.85	990.85	10,387,279	10,387,279
General Office Building	2,896.75	2,896.75	2896.75	30,367,241	30,367,241
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	2,824.42	2,824.42	2824.42	29,608,975	29,608,975
Single Family Housing	11,216.04	11,216.04	11216.04	117,579,991	117,579,991
Strip Mall	5,537.01	5,537.01	5537.01	58,045,608	58,045,608
Total	25,435.58	25,435.58	25,435.58	266,646,239	266,646,239

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	4,235.69	4,235.69	0.19	0.07	4,262.24
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	4,235.69	4,235.69	0.19	0.07	4,262.24
NaturalGas Mitigated	0.32	2.81	1.44	0.02		0.00	0.22		0.00	0.22	0.00	3,212.45	3,212.45	0.06	0.06	3,232.00
NaturalGas Unmitigated	0.32	2.81	1.44	0.02		0.00	0.22		0.00	0.22	0.00	3,212.45	3,212.45	0.06	0.06	3,232.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29
General Office Building	4.74373e+006	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02	0.00	253.14	253.14	0.00	0.00	254.68
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	394656	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	21.06	21.06	0.00	0.00	21.19
Single Family Housing	4.48112e+007	0.24	2.06	0.88	0.01		0.00	0.17		0.00	0.17	0.00	2,391.29	2,391.29	0.05	0.04	2,405.85
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.32**	**2.80**	**1.44**	**0.01**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**3,212.44**	**3,212.44**	**0.06**	**0.05**	**3,232.01**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29

General Office Building	4.74373e+006	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02	0.00	253.14	253.14	0.00	0.00	254.68
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	394656	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	21.06	21.06	0.00	0.00	21.19
Single Family Housing	4.48112e+007	0.24	2.06	0.88	0.01		0.00	0.17		0.00	0.17	0.00	2,391.29	2,391.29	0.05	0.04	2,405.85
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.32**	**2.80**	**1.44**	**0.01**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**3,212.44**	**3,212.44**	**0.06**	**0.05**	**3,232.01**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	692838					201.55	0.01	0.00	202.82
General Office Building	2.92569e+006					851.12	0.04	0.01	856.45
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	754451					219.48	0.01	0.00	220.85
Single Family Housing	8.16069e+006					2,374.04	0.11	0.04	2,388.92
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**4,235.69**	**0.19**	**0.06**	**4,262.24**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	692838					201.55	0.01	0.00	202.82

General Office Building	2.92569e+006					851.12	0.04	0.01	856.45
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	754451					219.48	0.01	0.00	220.85
Single Family Housing	8.16069e+006					2,374.04	0.11	0.04	2,388.92
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**4,235.69**	**0.19**	**0.06**	**4,262.24**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	14.86	0.11	9.91	0.00		0.00	0.09		0.00	0.09	0.00	588.47	588.47	0.03	0.01	592.28
Unmitigated	14.86	0.11	9.91	0.00		0.00	0.09		0.00	0.09	0.00	588.47	588.47	0.03	0.01	592.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	2.66					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	11.85					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.06	0.00	0.00	0.00		0.00	0.04		0.00	0.04	0.00	572.27	572.27	0.01	0.01	575.75
Landscaping	0.30	0.11	9.90	0.00		0.00	0.05		0.00	0.05	0.00	16.20	16.20	0.02	0.00	16.53
Total	**14.87**	**0.11**	**9.90**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**588.47**	**588.47**	**0.03**	**0.01**	**592.28**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.66					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	11.85					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.06	0.00	0.00	0.00		0.00	0.04		0.00	0.04	0.00	572.27	572.27	0.01	0.01	575.75
Landscaping	0.30	0.11	9.90	0.00		0.00	0.05		0.00	0.05	0.00	16.20	16.20	0.02	0.00	16.53
Total	**14.87**	**0.11**	**9.90**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**588.47**	**588.47**	**0.03**	**0.01**	**592.28**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					365.38	1.97	0.13	447.56
Unmitigated					365.38	1.97	0.13	447.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56
General Office Building	46.7617 / 28.6604					102.79	0.00	0.04	114.41
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	4.87249 / 2.98637					10.71	0.00	0.00	11.92
Single Family Housing	76.3605 / 48.1403					169.22	1.74	0.06	224.61
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**365.38**	**1.96**	**0.14**	**447.57**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56

General Office Building	46.7617 / 28.6604					102.79	0.00	0.04	114.41
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	4.87249 / 2.98637					10.71	0.00	0.00	11.92
Single Family Housing	76.3605 / 48.1403					169.22	1.74	0.06	224.61
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**365.38**	**1.96**	**0.14**	**447.57**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					782.03	46.22	0.00	1,752.58
Unmitigated					782.03	46.22	0.00	1,752.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	244.68					49.67	2.94	0.00	111.31
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	69.07					14.02	0.83	0.00	31.42
Single Family Housing	1374.32					278.97	16.49	0.00	625.20
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**782.03**	**46.22**	**0.00**	**1,752.58**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	244.68					49.67	2.94	0.00	111.31
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	69.07					14.02	0.83	0.00	31.42
Single Family Housing	1374.32					278.97	16.49	0.00	625.20
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**782.03**	**46.22**	**0.00**	**1,752.58**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 4 Operation 2029

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	526.205	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	266	Dwelling Unit
Single Family Housing	2102	Dwelling Unit
Strip Mall	159.816	1000sqft
Regional Shopping Center	131.551	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	27.69	0.20	17.73	0.00		0.00	0.17		0.00	0.17	0.00	1,054.88	1,054.88	0.05	0.02	1,061.71
Energy	0.65	5.66	3.10	0.04		0.00	0.45		0.00	0.45	0.00	15,775.98	15,775.98	0.55	0.28	15,873.67
Mobile	101.49	511.78	818.00	3.41	290.42	19.75	310.17	5.63	18.79	24.42	0.00	323,910.98	323,910.98	6.02	0.00	324,037.34
Waste						0.00	0.00		0.00	0.00	1,174.96	0.00	1,174.96	69.44	0.00	2,633.16
Water						0.00	0.00		0.00	0.00	0.00	672.53	672.53	3.53	0.25	822.86
Total	**129.83**	**517.64**	**838.83**	**3.45**	**290.42**	**19.75**	**310.79**	**5.63**	**18.79**	**25.04**	**1,174.96**	**341,414.37**	**342,589.33**	**79.59**	**0.55**	**344,428.74**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	27.69	0.20	17.73	0.00		0.00	0.17		0.00	0.17	0.00	1,054.88	1,054.88	0.05	0.02	1,061.71
Energy	0.65	5.66	3.10	0.04		0.00	0.45		0.00	0.45	0.00	15,775.98	15,775.98	0.55	0.28	15,873.67
Mobile	101.49	511.78	818.00	3.41	290.42	19.75	310.17	5.63	18.79	24.42	0.00	323,910.98	323,910.98	6.02	0.00	324,037.34
Waste						0.00	0.00		0.00	0.00	1,174.96	0.00	1,174.96	69.44	0.00	2,633.16
Water						0.00	0.00		0.00	0.00	0.00	672.53	672.53	3.53	0.25	822.86
Total	**129.83**	**517.64**	**838.83**	**3.45**	**290.42**	**19.75**	**310.79**	**5.63**	**18.79**	**25.04**	**1,174.96**	**341,414.37**	**342,589.33**	**79.59**	**0.55**	**344,428.74**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	101.49	511.78	818.00	3.41	290.42	19.75	310.17	5.63	18.79	24.42	0.00	323,910.98	323,910.98	6.02	0.00	324,037.34
Unmitigated	101.49	511.78	818.00	3.41	290.42	19.75	310.17	5.63	18.79	24.42	0.00	323,910.98	323,910.98	6.02	0.00	324,037.34
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,768.90	1,768.90	1768.90	18,543,732	18,543,732
General Office Building	5,793.52	5,793.52	5793.52	60,734,598	60,734,598
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	5,648.80	5,648.80	5648.80	59,217,500	59,217,500
Single Family Housing	20,116.14	20,116.14	20116.14	210,881,519	210,881,519
Strip Mall	9,207.00	9,207.00	9207.00	96,518,820	96,518,820
Total	50,632.36	50,632.36	50,632.36	530,789,122	530,789,122

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	9,334.79	9,334.79	0.42	0.16	9,393.29
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	9,334.79	9,334.79	0.42	0.16	9,393.29
NaturalGas Mitigated	0.65	5.66	3.10	0.04		0.00	0.45		0.00	0.45	0.00	6,441.19	6,441.19	0.12	0.12	6,480.39
NaturalGas Unmitigated	0.65	5.66	3.10	0.04		0.00	0.45		0.00	0.45	0.00	6,441.19	6,441.19	0.12	0.12	6,480.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	9.48748e+006	0.05	0.47	0.39	0.00		0.00	0.04		0.00	0.04	0.00	506.29	506.29	0.01	0.01	509.37
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	789306	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	42.12	42.12	0.00	0.00	42.38
Single Family Housing	8.03695e+007	0.43	3.70	1.58	0.02		0.00	0.30		0.00	0.30	0.00	4,288.82	4,288.82	0.08	0.08	4,314.92
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.64**	**5.67**	**3.10**	**0.02**		**0.00**	**0.44**		**0.00**	**0.44**	**0.00**	**6,441.19**	**6,441.19**	**0.13**	**0.13**	**6,480.39**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	9.48748e+006	0.05	0.47	0.39	0.00		0.00	0.04		0.00	0.04	0.00	506.29	506.29	0.01	0.01	509.37
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	789306	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	42.12	42.12	0.00	0.00	42.38
Single Family Housing	8.03695e+007	0.43	3.70	1.58	0.02		0.00	0.30		0.00	0.30	0.00	4,288.82	4,288.82	0.08	0.08	4,314.92
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.64**	**5.67**	**3.10**	**0.02**		**0.00**	**0.44**		**0.00**	**0.44**	**0.00**	**6,441.19**	**6,441.19**	**0.13**	**0.13**	**6,480.39**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	5.8514e+006					1,702.24	0.08	0.03	1,712.91
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.50889e+006					438.95	0.02	0.01	441.70
Single Family Housing	1.46363e+007					4,257.88	0.19	0.07	4,284.56
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**9,334.79**	**0.42**	**0.16**	**9,393.30**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	5.8514e+006					1,702.24	0.08	0.03	1,712.91
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.50889e+006					438.95	0.02	0.01	441.70
Single Family Housing	1.46363e+007					4,257.88	0.19	0.07	4,284.56
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**9,334.79**	**0.42**	**0.16**	**9,393.30**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	27.69	0.20	17.73	0.00		0.00	0.17		0.00	0.17	0.00	1,054.88	1,054.88	0.05	0.02	1,061.71

Unmitigated	27.69	0.20	17.73	0.00		0.00	0.17		0.00	0.17	0.00	1,054.88	1,054.88	0.05	0.02	1,061.71
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	22.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.10	0.00	0.01	0.00		0.00	0.07		0.00	0.07	0.00	1,025.84	1,025.84	0.02	0.02	1,032.08
Landscaping	0.53	0.20	17.72	0.00		0.00	0.10		0.00	0.10	0.00	29.05	29.05	0.03	0.00	29.63
Total	**27.68**	**0.20**	**17.73**	**0.00**		**0.00**	**0.17**		**0.00**	**0.17**	**0.00**	**1,054.89**	**1,054.89**	**0.05**	**0.02**	**1,061.71**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	22.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.10	0.00	0.01	0.00		0.00	0.07		0.00	0.07	0.00	1,025.84	1,025.84	0.02	0.02	1,032.08
Landscaping	0.53	0.20	17.72	0.00		0.00	0.10		0.00	0.10	0.00	29.05	29.05	0.03	0.00	29.63
Total	**27.68**	**0.20**	**17.73**	**0.00**		**0.00**	**0.17**		**0.00**	**0.17**	**0.00**	**1,054.89**	**1,054.89**	**0.05**	**0.02**	**1,061.71**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					672.53	3.53	0.25	822.86
Unmitigated					672.53	3.53	0.25	822.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	93.5253 / 57.3219					205.58	0.01	0.07	228.82
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	9.74424 / 5.97228					21.42	0.00	0.01	23.84
Single Family Housing	136.954 / 86.3404					303.49	3.12	0.11	402.85
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96
Total						**672.52**	**3.53**	**0.24**	**822.87**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	93.5253 / 57.3219					205.58	0.01	0.07	228.82
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	9.74424 / 5.97228					21.42	0.00	0.01	23.84
Single Family Housing	136.954 / 86.3404					303.49	3.12	0.11	402.85
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96
Total						**672.52**	**3.53**	**0.24**	**822.87**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					1,174.96	69.44	0.00	2,633.16
Unmitigated					1,174.96	69.44	0.00	2,633.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	489.38					99.34	5.87	0.00	222.63
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	138.13					28.04	1.66	0.00	62.84
Single Family Housing	2464.92					500.36	29.57	0.00	1,121.33
Strip Mall	167.81					34.06	2.01	0.00	76.34
Total						**1,174.96**	**69.44**	**0.00**	**2,633.16**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	489.38					99.34	5.87	0.00	222.63
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	138.13					28.04	1.66	0.00	62.84
Single Family Housing	2464.92					500.36	29.57	0.00	1,121.33
Strip Mall	167.81					34.06	2.01	0.00	76.34
Total						**1,174.96**	**69.44**	**0.00**	**2,633.16**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 5 Operation 2033

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	789.307	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	3159	Dwelling Unit
Strip Mall	160	1000sqft
Regional Shopping Center	197.327	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	39.38	0.31	26.65	0.00		0.00	0.26		0.00	0.25	0.00	1,585.44	1,585.44	0.07	0.03	1,595.70
Energy	0.91	7.92	4.17	0.05		0.00	0.63		0.00	0.63	0.00	21,767.87	21,767.87	0.75	0.38	21,902.65
Mobile	135.05	680.96	1,088.41	4.54	386.43	26.27	412.70	7.50	25.00	32.49	0.00	430,991.52	430,991.52	8.01	0.00	431,159.65
Waste						0.00	0.00		0.00	0.00	1,502.79	0.00	1,502.79	88.81	0.00	3,367.85
Water						0.00	0.00		0.00	0.00	0.00	958.02	958.02	5.31	0.35	1,177.48
Total	**175.34**	**689.19**	**1,119.23**	**4.59**	**386.43**	**26.27**	**413.59**	**7.50**	**25.00**	**33.37**	**1,502.79**	**455,302.85**	**456,805.64**	**102.95**	**0.76**	**459,203.33**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	39.38	0.31	26.65	0.00		0.00	0.26		0.00	0.25	0.00	1,585.44	1,585.44	0.07	0.03	1,595.70
Energy	0.91	7.92	4.17	0.05		0.00	0.63		0.00	0.63	0.00	21,767.87	21,767.87	0.75	0.38	21,902.65
Mobile	135.05	680.96	1,088.41	4.54	386.43	26.27	412.70	7.50	25.00	32.49	0.00	430,991.52	430,991.52	8.01	0.00	431,159.65
Waste						0.00	0.00		0.00	0.00	1,502.79	0.00	1,502.79	88.81	0.00	3,367.85
Water						0.00	0.00		0.00	0.00	0.00	958.02	958.02	5.31	0.35	1,177.48
Total	**175.34**	**689.19**	**1,119.23**	**4.59**	**386.43**	**26.27**	**413.59**	**7.50**	**25.00**	**33.37**	**1,502.79**	**455,302.85**	**456,805.64**	**102.95**	**0.76**	**459,203.33**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	135.05	680.96	1,088.41	4.54	386.43	26.27	412.70	7.50	25.00	32.49	0.00	430,991.52	430,991.52	8.01	0.00	431,159.65
Unmitigated	135.05	680.96	1,088.41	4.54	386.43	26.27	412.70	7.50	25.00	32.49	0.00	430,991.52	430,991.52	8.01	0.00	431,159.65
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	8,690.27	8,690.27	8690.27	91,101,839	91,101,839
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	8,473.22	8,473.22	8473.22	88,826,474	88,826,474
Single Family Housing	30,231.63	30,231.63	30231.63	316,924,224	316,924,224
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	67,370.72	67,370.72	67,370.72	706,260,747	706,260,747

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	12,728.36	12,728.36	0.58	0.22	12,808.12
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	12,728.36	12,728.36	0.58	0.22	12,808.12
NaturalGas Mitigated	0.91	7.92	4.17	0.05		0.00	0.63		0.00	0.63	0.00	9,039.51	9,039.51	0.17	0.17	9,094.53
NaturalGas Unmitigated	0.91	7.92	4.17	0.05		0.00	0.63		0.00	0.63	0.00	9,039.51	9,039.51	0.17	0.17	9,094.53
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.42312e+007	0.08	0.70	0.59	0.00		0.00	0.05		0.00	0.05	0.00	759.43	759.43	0.01	0.01	764.05
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.18396e+006	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	63.18	63.18	0.00	0.00	63.57
Single Family Housing	1.20784e+008	0.65	5.57	2.37	0.04		0.00	0.45		0.00	0.45	0.00	6,445.48	6,445.48	0.12	0.12	6,484.70
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.92**	**7.93**	**4.17**	**0.04**		**0.00**	**0.61**		**0.00**	**0.61**	**0.00**	**9,039.52**	**9,039.52**	**0.17**	**0.17**	**9,094.53**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.42312e+007	0.08	0.70	0.59	0.00		0.00	0.05		0.00	0.05	0.00	759.43	759.43	0.01	0.01	764.05
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.18396e+006	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	63.18	63.18	0.00	0.00	63.57
Single Family Housing	1.20784e+008	0.65	5.57	2.37	0.04		0.00	0.45		0.00	0.45	0.00	6,445.48	6,445.48	0.12	0.12	6,484.70
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.92**	**7.93**	**4.17**	**0.04**		**0.00**	**0.61**		**0.00**	**0.61**	**0.00**	**9,039.52**	**9,039.52**	**0.17**	**0.17**	**9,094.53**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	8.77709e+006					2,553.36	0.12	0.04	2,569.36
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.26334e+006					658.43	0.03	0.01	662.56
Single Family Housing	2.19963e+007					6,398.97	0.29	0.11	6,439.07
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**12,728.36**	**0.57**	**0.21**	**12,808.14**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	8.77709e+006					2,553.36	0.12	0.04	2,569.36
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.26334e+006					658.43	0.03	0.01	662.56
Single Family Housing	2.19963e+007					6,398.97	0.29	0.11	6,439.07
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**12,728.36**	**0.57**	**0.21**	**12,808.14**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	39.38	0.31	26.65	0.00		0.00	0.26		0.00	0.25	0.00	1,585.44	1,585.44	0.07	0.03	1,595.70

Unmitigated	39.38	0.31	26.65	0.00		0.00	0.26		0.00	0.25	0.00	1,585.44	1,585.44	0.07	0.03	1,595.70
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	31.37					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,541.79	1,541.79	0.03	0.03	1,551.17
Landscaping	0.80	0.31	26.64	0.00		0.00	0.15		0.00	0.15	0.00	43.66	43.66	0.04	0.00	44.53
Total	**39.39**	**0.31**	**26.65**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,585.45**	**1,585.45**	**0.07**	**0.03**	**1,595.70**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	31.37					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,541.79	1,541.79	0.03	0.03	1,551.17
Landscaping	0.80	0.31	26.64	0.00		0.00	0.15		0.00	0.15	0.00	43.66	43.66	0.04	0.00	44.53
Total	**39.39**	**0.31**	**26.65**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,585.45**	**1,585.45**	**0.07**	**0.03**	**1,595.70**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					958.02	5.31	0.35	1,177.48
Unmitigated					958.02	5.31	0.35	1,177.48
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	140.287 / 85.9824					308.38	0.01	0.11	343.23
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	14.6167 / 8.95864					32.13	0.00	0.01	35.76
Single Family Housing	205.822 / 129.757					456.11	4.69	0.16	605.42
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**958.02**	**5.29**	**0.34**	**1,177.49**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	140.287 / 85.9824					308.38	0.01	0.11	343.23
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	14.6167 / 8.95864					32.13	0.00	0.01	35.76
Single Family Housing	205.822 / 129.757					456.11	4.69	0.16	605.42
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**958.02**	**5.29**	**0.34**	**1,177.49**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					1,502.79	88.81	0.00	3,367.85
Unmitigated					1,502.79	88.81	0.00	3,367.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	734.06					149.01	8.81	0.00	333.94
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	207.2					42.06	2.49	0.00	94.26
Single Family Housing	3704.35					751.95	44.44	0.00	1,685.17
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,502.79**	**88.83**	**0.00**	**3,367.86**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	734.06					149.01	8.81	0.00	333.94
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	207.2					42.06	2.49	0.00	94.26
Single Family Housing	3704.35					751.95	44.44	0.00	1,685.17
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,502.79**	**88.83**	**0.00**	**3,367.86**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 6 Operation 2037

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1052.41	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	3196	Dwelling Unit
Regional Shopping Center	263.1	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	41.23	0.31	26.90	0.00		0.00	0.26		0.00	0.26	0.00	1,601.92	1,601.92	0.07	0.03	1,612.29
Energy	0.95	8.24	4.41	0.05		0.00	0.66		0.00	0.66	0.00	23,263.12	23,263.12	0.81	0.41	23,407.20
Mobile	134.86	675.69	1,101.17	4.93	421.17	26.22	447.39	8.13	25.07	33.20	0.00	461,858.56	461,858.56	8.39	0.00	462,034.76
Waste						0.00	0.00		0.00	0.00	1,575.30	0.00	1,575.30	93.10	0.00	3,530.35
Water						0.00	0.00		0.00	0.00	0.00	1,076.86	1,076.86	5.37	0.39	1,310.90
Total	**177.04**	**684.24**	**1,132.48**	**4.98**	**421.17**	**26.22**	**448.31**	**8.13**	**25.07**	**34.12**	**1,575.30**	**487,800.46**	**489,375.76**	**107.74**	**0.83**	**491,895.50**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	41.23	0.31	26.90	0.00		0.00	0.26		0.00	0.26	0.00	1,601.92	1,601.92	0.07	0.03	1,612.29
Energy	0.95	8.24	4.41	0.05		0.00	0.66		0.00	0.66	0.00	23,263.12	23,263.12	0.81	0.41	23,407.20
Mobile	134.86	675.69	1,101.17	4.93	421.17	26.22	447.39	8.13	25.07	33.20	0.00	461,858.56	461,858.56	8.39	0.00	462,034.76
Waste						0.00	0.00		0.00	0.00	1,575.30	0.00	1,575.30	93.10	0.00	3,530.35
Water						0.00	0.00		0.00	0.00	0.00	1,076.86	1,076.86	5.37	0.39	1,310.90
Total	**177.04**	**684.24**	**1,132.48**	**4.98**	**421.17**	**26.22**	**448.31**	**8.13**	**25.07**	**34.12**	**1,575.30**	**487,800.46**	**489,375.76**	**107.74**	**0.83**	**491,895.50**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	134.86	675.69	1,101.17	4.93	421.17	26.22	447.39	8.13	25.07	33.20	0.00	461,858.56	461,858.56	8.39	0.00	462,034.76
Unmitigated	134.86	675.69	1,101.17	4.93	421.17	26.22	447.39	8.13	25.07	33.20	0.00	461,858.56	461,858.56	8.39	0.00	462,034.76
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	11,587.03	11,587.03	11587.03	121,469,196	121,469,196
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	11,297.51	11,297.51	11297.51	118,434,099	118,434,099
Single Family Housing	30,585.72	30,585.72	30585.72	320,636,220	320,636,220
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	73,445.87	73,445.87	73,445.87	769,947,724	769,947,724

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	13,873.90	13,873.90	0.63	0.24	13,960.84
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	13,873.90	13,873.90	0.63	0.24	13,960.84
NaturalGas Mitigated	0.95	8.24	4.41	0.05		0.00	0.66		0.00	0.66	0.00	9,389.21	9,389.21	0.18	0.17	9,446.35
NaturalGas Unmitigated	0.95	8.24	4.41	0.05		0.00	0.66		0.00	0.66	0.00	9,389.21	9,389.21	0.18	0.17	9,446.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.8975e+007	0.10	0.93	0.78	0.01		0.00	0.07		0.00	0.07	0.00	1,012.58	1,012.58	0.02	0.02	1,018.74
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.57861e+006	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	84.24	84.24	0.00	0.00	84.75
Single Family Housing	1.22198e+008	0.66	5.63	2.40	0.04		0.00	0.46		0.00	0.46	0.00	6,520.97	6,520.97	0.12	0.12	6,560.66
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.95**	**8.24**	**4.41**	**0.05**		**0.00**	**0.65**		**0.00**	**0.65**	**0.00**	**9,389.22**	**9,389.22**	**0.18**	**0.18**	**9,446.36**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.8975e+007	0.10	0.93	0.78	0.01		0.00	0.07		0.00	0.07	0.00	1,012.58	1,012.58	0.02	0.02	1,018.74
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.57861e+006	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	84.24	84.24	0.00	0.00	84.75
Single Family Housing	1.22198e+008	0.66	5.63	2.40	0.04		0.00	0.46		0.00	0.46	0.00	6,520.97	6,520.97	0.12	0.12	6,560.66
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.95**	**8.24**	**4.41**	**0.05**		**0.00**	**0.65**		**0.00**	**0.65**	**0.00**	**9,389.22**	**9,389.22**	**0.18**	**0.18**	**9,446.36**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.17028e+007					3,404.48	0.15	0.06	3,425.81
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.01778e+006					877.91	0.04	0.02	883.41
Single Family Housing	2.22539e+007					6,473.92	0.29	0.11	6,514.49
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**13,873.91**	**0.61**	**0.24**	**13,960.86**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.17028e+007					3,404.48	0.15	0.06	3,425.81
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.01778e+006					877.91	0.04	0.02	883.41
Single Family Housing	2.22539e+007					6,473.92	0.29	0.11	6,514.49
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**13,873.91**	**0.61**	**0.24**	**13,960.86**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	41.23	0.31	26.90	0.00		0.00	0.26		0.00	0.26	0.00	1,601.92	1,601.92	0.07	0.03	1,612.29

Unmitigated	41.23	0.31	26.90	0.00		0.00	0.26		0.00	0.26	0.00	1,601.92	1,601.92	0.07	0.03	1,612.29
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.35					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	32.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,557.81	1,557.81	0.03	0.03	1,567.29
Landscaping	0.80	0.31	26.89	0.00		0.00	0.15		0.00	0.15	0.00	44.11	44.11	0.04	0.00	44.99
Total	**41.23**	**0.31**	**26.90**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,601.92**	**1,601.92**	**0.07**	**0.03**	**1,612.28**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.35					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	32.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,557.81	1,557.81	0.03	0.03	1,567.29
Landscaping	0.80	0.31	26.89	0.00		0.00	0.15		0.00	0.15	0.00	44.11	44.11	0.04	0.00	44.99
Total	**41.23**	**0.31**	**26.90**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,601.92**	**1,601.92**	**0.07**	**0.03**	**1,612.28**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,076.86	5.37	0.39	1,310.90
Unmitigated					1,076.86	5.37	0.39	1,310.90
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	187.049 / 114.643					411.17	0.02	0.15	457.64
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	19.4885 / 11.9446					42.84	0.00	0.02	47.68
Single Family Housing	208.232 / 131.277					461.45	4.75	0.17	612.51
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,076.86**	**5.36**	**0.40**	**1,310.91**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	187.049 / 114.643					411.17	0.02	0.15	457.64
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	19.4885 / 11.9446					42.84	0.00	0.02	47.68
Single Family Housing	208.232 / 131.277					461.45	4.75	0.17	612.51
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,076.86**	**5.36**	**0.40**	**1,310.91**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					1,575.30	93.10	0.00	3,530.35
Unmitigated					1,575.30	93.10	0.00	3,530.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	978.74					198.68	11.74	0.00	445.24
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	276.26					56.08	3.31	0.00	125.68
Single Family Housing	3747.81					760.77	44.96	0.00	1,704.94
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,575.30**	**93.10**	**0.00**	**3,530.35**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	978.74					198.68	11.74	0.00	445.24
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	276.26					56.08	3.31	0.00	125.68
Single Family Housing	3747.81					760.77	44.96	0.00	1,704.94
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,575.30**	**93.10**	**0.00**	**3,530.35**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative Phase 7 Operation 2041

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1315.51	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	3232	Dwelling Unit
Regional Shopping Center	328.88	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	43.06	0.31	27.15	0.00		0.00	0.26		0.00	0.26	0.00	1,617.96	1,617.96	0.07	0.03	1,628.43
Energy	0.98	8.55	4.65	0.05		0.00	0.68		0.00	0.68	0.00	24,754.29	24,754.29	0.87	0.44	24,907.66
Mobile	139.84	699.25	1,141.85	5.32	455.88	28.03	483.90	8.78	26.62	35.39	0.00	494,893.69	494,893.69	8.85	0.00	495,079.64
Waste						0.00	0.00		0.00	0.00	1,647.56	0.00	1,647.56	97.37	0.00	3,692.28
Water						0.00	0.00		0.00	0.00	0.00	1,195.56	1,195.56	5.43	0.43	1,444.13
Total	**183.88**	**708.11**	**1,173.65**	**5.37**	**455.88**	**28.03**	**484.84**	**8.78**	**26.62**	**36.33**	**1,647.56**	**522,461.50**	**524,109.06**	**112.59**	**0.90**	**526,752.14**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	43.06	0.31	27.15	0.00		0.00	0.26		0.00	0.26	0.00	1,617.96	1,617.96	0.07	0.03	1,628.43
Energy	0.98	8.55	4.65	0.05		0.00	0.68		0.00	0.68	0.00	24,754.29	24,754.29	0.87	0.44	24,907.66
Mobile	139.84	699.25	1,141.85	5.32	455.88	28.03	483.90	8.78	26.62	35.39	0.00	494,893.69	494,893.69	8.85	0.00	495,079.64
Waste						0.00	0.00		0.00	0.00	1,647.56	0.00	1,647.56	97.37	0.00	3,692.28
Water						0.00	0.00		0.00	0.00	0.00	1,195.56	1,195.56	5.43	0.43	1,444.13
Total	**183.88**	**708.11**	**1,173.65**	**5.37**	**455.88**	**28.03**	**484.84**	**8.78**	**26.62**	**36.33**	**1,647.56**	**522,461.50**	**524,109.06**	**112.59**	**0.90**	**526,752.14**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	139.84	699.25	1,141.85	5.32	455.88	28.03	483.90	8.78	26.62	35.39	0.00	494,893.69	494,893.69	8.85	0.00	495,079.64
Unmitigated	139.84	699.25	1,141.85	5.32	455.88	28.03	483.90	8.78	26.62	35.39	0.00	494,893.69	494,893.69	8.85	0.00	495,079.64
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	14,483.77	14,483.77	14483.77	151,836,206	151,836,206
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	14,122.11	14,122.11	14122.11	148,044,874	148,044,874
Single Family Housing	30,930.24	30,930.24	30930.24	324,247,892	324,247,892
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	79,511.71	79,511.71	79,511.71	833,537,182	833,537,182

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	15,017.42	15,017.42	0.68	0.26	15,111.53
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	15,017.42	15,017.42	0.68	0.26	15,111.53
NaturalGas Mitigated	0.98	8.55	4.65	0.05		0.00	0.68		0.00	0.68	0.00	9,736.87	9,736.87	0.19	0.18	9,796.13
NaturalGas Unmitigated	0.98	8.55	4.65	0.05		0.00	0.68		0.00	0.68	0.00	9,736.87	9,736.87	0.19	0.18	9,796.13
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.37187e+007	0.13	1.16	0.98	0.01		0.00	0.09		0.00	0.09	0.00	1,265.72	1,265.72	0.02	0.02	1,273.42
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.97327e+006	0.01	0.10	0.08	0.00		0.00	0.01		0.00	0.01	0.00	105.30	105.30	0.00	0.00	105.94
Single Family Housing	1.23575e+008	0.67	5.69	2.42	0.04		0.00	0.46		0.00	0.46	0.00	6,594.42	6,594.42	0.13	0.12	6,634.55
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.99**	**8.55**	**4.64**	**0.05**		**0.00**	**0.67**		**0.00**	**0.67**	**0.00**	**9,736.87**	**9,736.87**	**0.19**	**0.18**	**9,796.12**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.37187e+007	0.13	1.16	0.98	0.01		0.00	0.09		0.00	0.09	0.00	1,265.72	1,265.72	0.02	0.02	1,273.42
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.97327e+006	0.01	0.10	0.08	0.00		0.00	0.01		0.00	0.01	0.00	105.30	105.30	0.00	0.00	105.94
Single Family Housing	1.23575e+008	0.67	5.69	2.42	0.04		0.00	0.46		0.00	0.46	0.00	6,594.42	6,594.42	0.13	0.12	6,634.55
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.99**	**8.55**	**4.64**	**0.05**		**0.00**	**0.67**		**0.00**	**0.67**	**0.00**	**9,736.87**	**9,736.87**	**0.19**	**0.18**	**9,796.12**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.46285e+007					4,255.60	0.19	0.07	4,282.26
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.77223e+006					1,097.39	0.05	0.02	1,104.26
Single Family Housing	2.25046e+007					6,546.84	0.30	0.11	6,587.87
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**15,017.43**	**0.67**	**0.25**	**15,111.54**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.46285e+007					4,255.60	0.19	0.07	4,282.26
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.77223e+006					1,097.39	0.05	0.02	1,104.26
Single Family Housing	2.25046e+007					6,546.84	0.30	0.11	6,587.87
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**15,017.43**	**0.67**	**0.25**	**15,111.54**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	43.06	0.31	27.15	0.00		0.00	0.26		0.00	0.26	0.00	1,617.96	1,617.96	0.07	0.03	1,628.43

Unmitigated	43.06	0.31	27.15	0.00		0.00	0.26		0.00	0.26	0.00	1,617.96	1,617.96	0.07	0.03	1,628.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	34.45					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,573.41	1,573.41	0.03	0.03	1,582.98
Landscaping	0.81	0.31	27.14	0.00		0.00	0.15		0.00	0.15	0.00	44.55	44.55	0.04	0.00	45.44
Total	**43.06**	**0.31**	**27.15**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,617.96**	**1,617.96**	**0.07**	**0.03**	**1,628.42**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	34.45					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.16	0.00	0.01	0.00		0.00	0.11		0.00	0.11	0.00	1,573.41	1,573.41	0.03	0.03	1,582.98
Landscaping	0.81	0.31	27.14	0.00		0.00	0.15		0.00	0.15	0.00	44.55	44.55	0.04	0.00	45.44
Total	**43.06**	**0.31**	**27.15**	**0.00**		**0.00**	**0.26**		**0.00**	**0.26**	**0.00**	**1,617.96**	**1,617.96**	**0.07**	**0.03**	**1,628.42**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,195.56	5.43	0.43	1,444.13
Unmitigated					1,195.56	5.43	0.43	1,444.13
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	233.811 / 143.303					513.96	0.02	0.19	572.05
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	24.361 / 14.9309					53.55	0.00	0.02	59.60
Single Family Housing	210.578 / 132.756					466.65	4.80	0.17	619.41
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,195.56**	**5.41**	**0.44**	**1,444.14**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	233.811 / 143.303					513.96	0.02	0.19	572.05
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	24.361 / 14.9309					53.55	0.00	0.02	59.60
Single Family Housing	210.578 / 132.756					466.65	4.80	0.17	619.41
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,195.56**	**5.41**	**0.44**	**1,444.14**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					1,647.56	97.37	0.00	3,692.28
Unmitigated					1,647.56	97.37	0.00	3,692.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1223.42					248.34	14.68	0.00	556.55
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	345.32					70.10	4.14	0.00	157.09
Single Family Housing	3790.04					769.34	45.47	0.00	1,724.15
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,647.55**	**97.38**	**0.00**	**3,692.28**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1223.42					248.34	14.68	0.00	556.55
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	345.32					70.10	4.14	0.00	157.09
Single Family Housing	3790.04					769.34	45.47	0.00	1,724.15
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,647.55**	**97.38**	**0.00**	**3,692.28**

9.0 Vegetation

CalEEMod Operation Emissions for the CCH Avoidance MSHCP Alternative

(Does not include construction emissions)

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 1 Operation 2017

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	175	1000sqft
Apartments Low Rise	33	Dwelling Unit
Single Family Housing	212	Dwelling Unit
Strip Mall	15.11	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.95	0.02	1.86	0.00		0.00	0.02		0.00	0.02	0.00	109.14	109.14	0.01	0.00	109.85
Energy	0.07	0.57	0.31	0.00		0.00	0.04		0.00	0.04	0.00	1,302.53	1,302.53	0.04	0.02	1,310.58
Mobile	14.52	94.17	117.68	0.28	23.55	3.49	27.04	1.16	3.49	4.65	0.00	29,924.95	29,924.95	0.80	0.00	29,941.85

Waste						0.00	0.00		0.00	0.00	259.22	0.00	259.22	15.32	0.00	580.93
Water						0.00	0.00		0.00	0.00	0.00	60.59	60.59	0.37	0.02	75.02
Total	**17.54**	**94.76**	**119.85**	**0.28**	**23.55**	**3.49**	**27.10**	**1.16**	**3.49**	**4.71**	**259.22**	**31,397.21**	**31,656.43**	**16.54**	**0.04**	**32,018.23**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.95	0.02	1.86	0.00		0.00	0.02		0.00	0.02	0.00	109.14	109.14	0.01	0.00	109.85
Energy	0.07	0.57	0.31	0.00		0.00	0.04		0.00	0.04	0.00	1,302.53	1,302.53	0.04	0.02	1,310.58
Mobile	14.52	94.17	117.68	0.28	23.55	3.49	27.04	1.16	3.49	4.65	0.00	29,924.95	29,924.95	0.80	0.00	29,941.85
Waste						0.00	0.00		0.00	0.00	259.22	0.00	259.22	15.32	0.00	580.93
Water						0.00	0.00		0.00	0.00	0.00	60.59	60.59	0.37	0.02	75.02
Total	**17.54**	**94.76**	**119.85**	**0.28**	**23.55**	**3.49**	**27.10**	**1.16**	**3.49**	**4.71**	**259.22**	**31,397.21**	**31,656.43**	**16.54**	**0.04**	**32,018.23**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	14.52	94.17	117.68	0.28	23.55	3.49	27.04	1.16	3.49	4.65	0.00	29,924.95	29,924.95	0.80	0.00	29,941.85

Unmitigated	14.52	94.17	117.68	0.28	23.55	3.49	27.04	1.16	3.49	4.65	0.00	29,924.95	29,924.95	0.80	0.00	29,941.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	219.45	219.45	219.45	2,300,538	2,300,538
Racquet Club	985.25	985.25	985.25	10,328,573	10,328,573
Single Family Housing	2,028.84	2,028.84	2028.84	21,268,735	21,268,735
Strip Mall	870.49	870.49	870.49	9,125,490	9,125,490
Total	4,104.03	4,104.03	4,104.03	43,023,337	43,023,337

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	658.90	658.90	0.03	0.01	663.03
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	658.90	658.90	0.03	0.01	663.03
NaturalGas Mitigated	0.07	0.57	0.31	0.00		0.00	0.04		0.00	0.04	0.00	643.64	643.64	0.01	0.01	647.55
NaturalGas Unmitigated	0.07	0.57	0.31	0.00		0.00	0.04		0.00	0.04	0.00	643.64	643.64	0.01	0.01	647.55
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	8.10577e+006	0.04	0.37	0.16	0.00		0.00	0.03		0.00	0.03	0.00	432.55	432.55	0.01	0.01	435.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.06**	**0.56**	**0.31**	**0.00**		**0.00**	**0.04**		**0.00**	**0.04**	**0.00**	**643.63**	**643.63**	**0.01**	**0.01**	**647.56**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	8.10577e+006	0.04	0.37	0.16	0.00		0.00	0.03		0.00	0.03	0.00	432.55	432.55	0.01	0.01	435.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.06**	**0.56**	**0.31**	**0.00**		**0.00**	**0.04**		**0.00**	**0.04**	**0.00**	**643.63**	**643.63**	**0.01**	**0.01**	**647.56**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.47617e+006					429.43	0.02	0.01	432.12
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**658.89**	**0.03**	**0.01**	**663.02**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.47617e+006					429.43	0.02	0.01	432.12
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**658.89**	**0.03**	**0.01**	**663.02**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.95	0.02	1.86	0.00		0.00	0.02		0.00	0.02	0.00	109.14	109.14	0.01	0.00	109.85
Unmitigated	2.95	0.02	1.86	0.00		0.00	0.02		0.00	0.02	0.00	109.14	109.14	0.01	0.00	109.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.36					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	106.14	106.14	0.00	0.00	106.78
Landscaping	0.06	0.02	1.86	0.00		0.00	0.01		0.00	0.01	0.00	3.01	3.01	0.00	0.00	3.07
Total	**2.95**	**0.02**	**1.86**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**109.15**	**109.15**	**0.00**	**0.00**	**109.85**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.36					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	106.14	106.14	0.00	0.00	106.78
Landscaping	0.06	0.02	1.86	0.00		0.00	0.01		0.00	0.01	0.00	3.01	3.01	0.00	0.00	3.07
Total	**2.95**	**0.02**	**1.86**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**109.15**	**109.15**	**0.00**	**0.00**	**109.85**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					60.59	0.37	0.02	75.02
Unmitigated					60.59	0.37	0.02	75.02
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	13.8127 / 8.70798					30.61	0.32	0.01	40.63
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**60.58**	**0.37**	**0.02**	**75.01**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	13.8127 / 8.70798					30.61	0.32	0.01	40.63
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**60.58**	**0.37**	**0.02**	**75.01**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					259.22	15.32	0.00	580.93
Unmitigated					259.22	15.32	0.00	580.93
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78

Single Family Housing	248.46					50.44	2.98	0.00	113.03
Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**259.22**	**15.32**	**0.00**	**580.94**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78
Single Family Housing	248.46					50.44	2.98	0.00	113.03
Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**259.22**	**15.32**	**0.00**	**580.94**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 2 Operation 2021

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	350	1000sqft
Apartments Low Rise	99	Dwelling Unit
Single Family Housing	640	Dwelling Unit
Strip Mall	91.7	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.29	0.06	5.56	0.00		0.00	0.05		0.00	0.05	0.00	329.21	329.21	0.01	0.01	331.34
Energy	0.18	1.56	0.80	0.01		0.00	0.12		0.00	0.12	0.00	3,793.99	3,793.99	0.12	0.07	3,817.44
Mobile	38.02	220.09	306.50	0.96	80.59	8.06	88.65	1.59	7.61	9.20	0.00	95,610.20	95,610.20	2.11	0.00	95,654.60

Waste						0.00	0.00		0.00	0.00	586.06	0.00	586.06	34.64	0.00	1,313.40
Water						0.00	0.00		0.00	0.00	0.00	167.13	167.13	1.10	0.06	208.89
Total	**46.49**	**221.71**	**312.86**	**0.97**	**80.59**	**8.06**	**88.82**	**1.59**	**7.61**	**9.37**	**586.06**	**99,900.53**	**100,486.59**	**37.98**	**0.14**	**101,325.67**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.29	0.06	5.56	0.00		0.00	0.05		0.00	0.05	0.00	329.21	329.21	0.01	0.01	331.34
Energy	0.18	1.56	0.80	0.01		0.00	0.12		0.00	0.12	0.00	3,793.99	3,793.99	0.12	0.07	3,817.44
Mobile	38.02	220.09	306.50	0.96	80.59	8.06	88.65	1.59	7.61	9.20	0.00	95,610.20	95,610.20	2.11	0.00	95,654.60
Waste						0.00	0.00		0.00	0.00	586.06	0.00	586.06	34.64	0.00	1,313.40
Water						0.00	0.00		0.00	0.00	0.00	167.13	167.13	1.10	0.06	208.89
Total	**46.49**	**221.71**	**312.86**	**0.97**	**80.59**	**8.06**	**88.82**	**1.59**	**7.61**	**9.37**	**586.06**	**99,900.53**	**100,486.59**	**37.98**	**0.14**	**101,325.67**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	38.02	220.09	306.50	0.96	80.59	8.06	88.65	1.59	7.61	9.20	0.00	95,610.20	95,610.20	2.11	0.00	95,654.60
Unmitigated	38.02	220.09	306.50	0.96	80.59	8.06	88.65	1.59	7.61	9.20	0.00	95,610.20	95,610.20	2.11	0.00	95,654.60
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	658.35	658.35	658.35	6,901,615	6,901,615
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Single Family Housing	6,124.80	6,124.80	6124.80	64,207,503	64,207,503
Strip Mall	5,282.84	5,282.84	5282.84	55,381,037	55,381,037
Total	14,036.49	14,036.49	14,036.49	147,147,301	147,147,301

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,005.09	2,005.09	0.09	0.03	2,017.66
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,005.09	2,005.09	0.09	0.03	2,017.66
NaturalGas Mitigated	0.18	1.56	0.80	0.01		0.00	0.12		0.00	0.12	0.00	1,788.90	1,788.90	0.03	0.03	1,799.79
NaturalGas Unmitigated	0.18	1.56	0.80	0.01		0.00	0.12		0.00	0.12	0.00	1,788.90	1,788.90	0.03	0.03	1,799.79
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.44703e+007	0.13	1.13	0.48	0.01		0.00	0.09		0.00	0.09	0.00	1,305.83	1,305.83	0.03	0.02	1,313.77
Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.17**	**1.57**	**0.80**	**0.01**		**0.00**	**0.12**		**0.00**	**0.12**	**0.00**	**1,788.91**	**1,788.91**	**0.04**	**0.03**	**1,799.79**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.44703e+007	0.13	1.13	0.48	0.01		0.00	0.09		0.00	0.09	0.00	1,305.83	1,305.83	0.03	0.02	1,313.77

Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.17**	**1.57**	**0.80**	**0.01**		**0.00**	**0.12**		**0.00**	**0.12**	**0.00**	**1,788.91**	**1,788.91**	**0.04**	**0.03**	**1,799.79**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	4.45635e+006					1,296.40	0.06	0.02	1,304.53
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,005.09**	**0.09**	**0.03**	**2,017.66**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	4.45635e+006					1,296.40	0.06	0.02	1,304.53
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,005.09**	**0.09**	**0.03**	**2,017.66**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.29	0.06	5.56	0.00		0.00	0.05		0.00	0.05	0.00	329.21	329.21	0.01	0.01	331.34
Unmitigated	8.29	0.06	5.56	0.00		0.00	0.05		0.00	0.05	0.00	329.21	329.21	0.01	0.01	331.34
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.48					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	6.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.03	0.00	0.00	0.00		0.00	0.02		0.00	0.02	0.00	320.14	320.14	0.01	0.01	322.09
Landscaping	0.17	0.06	5.56	0.00		0.00	0.03		0.00	0.03	0.00	9.06	9.06	0.01	0.00	9.25
Total	**8.29**	**0.06**	**5.56**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**329.20**	**329.20**	**0.02**	**0.01**	**331.34**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.48					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	6.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hearth	0.03	0.00	0.00	0.00		0.00	0.02		0.00	0.02	0.00	320.14	320.14	0.01	0.01	322.09
Landscaping	0.17	0.06	5.56	0.00		0.00	0.03		0.00	0.03	0.00	9.06	9.06	0.01	0.00	9.25
Total	**8.29**	**0.06**	**5.56**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**329.20**	**329.20**	**0.02**	**0.01**	**331.34**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					167.13	1.10	0.06	208.89
Unmitigated					167.13	1.10	0.06	208.89
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	41.6986 / 26.2882					92.41	0.95	0.03	122.66
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**167.13**	**1.10**	**0.07**	**208.90**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	41.6986 / 26.2882					92.41	0.95	0.03	122.66
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**167.13**	**1.10**	**0.07**	**208.90**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					586.06	34.64	0.00	1,313.40
Unmitigated					586.06	34.64	0.00	1,313.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	750.3					152.30	9.00	0.00	341.32
Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**586.06**	**34.64**	**0.00**	**1,313.40**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	750.3					152.30	9.00	0.00	341.32
Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**586.06**	**34.64**	**0.00**	**1,313.40**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 3 Operation 2025

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	263.102	1000sqft
Racquet Club	350	1000sqft
Apartments Low Rise	149	Dwelling Unit
Single Family Housing	996	Dwelling Unit
Regional Shopping Center	65.776	1000sqft
Strip Mall	96.112	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	13.28	0.10	8.59	0.00		0.00	0.08		0.00	0.08	0.00	510.07	510.07	0.02	0.01	513.37

Energy	0.29	2.50	1.31	0.02		0.00	0.20		0.00	0.20	0.00	6,732.53	6,732.53	0.23	0.12	6,774.21
Mobile	54.35	288.30	435.01	1.62	136.33	11.38	147.71	2.68	10.30	12.98	0.00	157,702.72	157,702.72	3.06	0.00	157,767.04
Waste						0.00	0.00		0.00	0.00	740.17	0.00	740.17	43.74	0.00	1,658.76
Water						0.00	0.00		0.00	0.00	0.00	339.97	339.97	1.71	0.12	413.83
Total	**67.92**	**290.90**	**444.91**	**1.64**	**136.33**	**11.38**	**147.99**	**2.68**	**10.30**	**13.26**	**740.17**	**165,285.29**	**166,025.46**	**48.76**	**0.25**	**167,127.21**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	13.28	0.10	8.59	0.00		0.00	0.08		0.00	0.08	0.00	510.07	510.07	0.02	0.01	513.37
Energy	0.29	2.50	1.31	0.02		0.00	0.20		0.00	0.20	0.00	6,732.53	6,732.53	0.23	0.12	6,774.21
Mobile	54.35	288.30	435.01	1.62	136.33	11.38	147.71	2.68	10.30	12.98	0.00	157,702.72	157,702.72	3.06	0.00	157,767.04
Waste						0.00	0.00		0.00	0.00	740.17	0.00	740.17	43.74	0.00	1,658.76
Water						0.00	0.00		0.00	0.00	0.00	339.97	339.97	1.71	0.12	413.83
Total	**67.92**	**290.90**	**444.91**	**1.64**	**136.33**	**11.38**	**147.99**	**2.68**	**10.30**	**13.26**	**740.17**	**165,285.29**	**166,025.46**	**48.76**	**0.25**	**167,127.21**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	54.35	288.30	435.01	1.62	136.33	11.38	147.71	2.68	10.30	12.98	0.00	157,702.72	157,702.72	3.06	0.00	157,767.04
Unmitigated	54.35	288.30	435.01	1.62	136.33	11.38	147.71	2.68	10.30	12.98	0.00	157,702.72	157,702.72	3.06	0.00	157,767.04
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	990.85	990.85	990.85	10,387,279	10,387,279
General Office Building	2,896.75	2,896.75	2896.75	30,367,241	30,367,241
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	2,824.42	2,824.42	2824.42	29,608,975	29,608,975
Single Family Housing	9,531.72	9,531.72	9531.72	99,922,927	99,922,927
Strip Mall	5,537.01	5,537.01	5537.01	58,045,608	58,045,608
Total	23,751.26	23,751.26	23,751.26	248,989,175	248,989,175

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	3,879.18	3,879.18	0.18	0.07	3,903.49
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	3,879.18	3,879.18	0.18	0.07	3,903.49
NaturalGas Mitigated	0.29	2.50	1.31	0.02		0.00	0.20		0.00	0.20	0.00	2,853.35	2,853.35	0.05	0.05	2,870.72
NaturalGas Unmitigated	0.29	2.50	1.31	0.02		0.00	0.20		0.00	0.20	0.00	2,853.35	2,853.35	0.05	0.05	2,870.72
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29
General Office Building	4.74373e+006	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02	0.00	253.14	253.14	0.00	0.00	254.68
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	394656	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	21.06	21.06	0.00	0.00	21.19
Single Family Housing	3.80818e+007	0.21	1.75	0.75	0.01		0.00	0.14		0.00	0.14	0.00	2,032.19	2,032.19	0.04	0.04	2,044.56
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.29**	**2.49**	**1.31**	**0.01**		**0.00**	**0.19**		**0.00**	**0.19**	**0.00**	**2,853.34**	**2,853.34**	**0.05**	**0.05**	**2,870.72**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29
General Office Building	4.74373e+006	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02	0.00	253.14	253.14	0.00	0.00	254.68
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	394656	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	21.06	21.06	0.00	0.00	21.19
Single Family Housing	3.80818e+007	0.21	1.75	0.75	0.01		0.00	0.14		0.00	0.14	0.00	2,032.19	2,032.19	0.04	0.04	2,044.56
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.29**	**2.49**	**1.31**	**0.01**		**0.00**	**0.19**		**0.00**	**0.19**	**0.00**	**2,853.34**	**2,853.34**	**0.05**	**0.05**	**2,870.72**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	692838					201.55	0.01	0.00	202.82
General Office Building	2.92569e+006					851.12	0.04	0.01	856.45
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	754451					219.48	0.01	0.00	220.85
Single Family Housing	6.9352e+006					2,017.53	0.09	0.03	2,030.17
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**3,879.18**	**0.17**	**0.05**	**3,903.49**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			

Apartments Low Rise	692838					201.55	0.01	0.00	202.82
General Office Building	2.92569e+006					851.12	0.04	0.01	856.45
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	754451					219.48	0.01	0.00	220.85
Single Family Housing	6.9352e+006					2,017.53	0.09	0.03	2,030.17
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**3,879.18**	**0.17**	**0.05**	**3,903.49**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	13.28	0.10	8.59	0.00		0.00	0.08		0.00	0.08	0.00	510.07	510.07	0.02	0.01	513.37
Unmitigated	13.28	0.10	8.59	0.00		0.00	0.08		0.00	0.08	0.00	510.07	510.07	0.02	0.01	513.37
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.36					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Consumer Products	10.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.05	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	496.02	496.02	0.01	0.01	499.04
Landscaping	0.26	0.10	8.59	0.00		0.00	0.05		0.00	0.05	0.00	14.05	14.05	0.01	0.00	14.33
Total	**13.28**	**0.10**	**8.59**	**0.00**		**0.00**	**0.08**		**0.00**	**0.08**	**0.00**	**510.07**	**510.07**	**0.02**	**0.01**	**513.37**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.36					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	10.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.05	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	496.02	496.02	0.01	0.01	499.04
Landscaping	0.26	0.10	8.59	0.00		0.00	0.05		0.00	0.05	0.00	14.05	14.05	0.01	0.00	14.33
Total	**13.28**	**0.10**	**8.59**	**0.00**		**0.00**	**0.08**		**0.00**	**0.08**	**0.00**	**510.07**	**510.07**	**0.02**	**0.01**	**513.37**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					339.97	1.71	0.12	413.83
Unmitigated					339.97	1.71	0.12	413.83

Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56
General Office Building	46.7617 / 28.6604					102.79	0.00	0.04	114.41
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	4.87249 / 2.98637					10.71	0.00	0.00	11.92
Single Family Housing	64.8934 / 40.9111					143.81	1.48	0.05	190.88
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**339.97**	**1.70**	**0.13**	**413.84**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56
General Office Building	46.7617 / 28.6604					102.79	0.00	0.04	114.41
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	4.87249 / 2.98637					10.71	0.00	0.00	11.92
Single Family Housing	64.8934 / 40.9111					143.81	1.48	0.05	190.88
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**339.97**	**1.70**	**0.13**	**413.84**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					740.17	43.74	0.00	1,658.76
Unmitigated					740.17	43.74	0.00	1,658.76
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	244.68					49.67	2.94	0.00	111.31
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	69.07					14.02	0.83	0.00	31.42
Single Family Housing	1168.09					237.11	14.01	0.00	531.38
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**740.17**	**43.74**	**0.00**	**1,658.76**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	244.68					49.67	2.94	0.00	111.31
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	69.07					14.02	0.83	0.00	31.42
Single Family Housing	1168.09					237.11	14.01	0.00	531.38
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**740.17**	**43.74**	**0.00**	**1,658.76**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 4 Operation 2029

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	526.205	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	266	Dwelling Unit
Single Family Housing	1788	Dwelling Unit
Regional Shopping Center	131.551	1000sqft
Strip Mall	159.816	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	24.87	0.18	15.38	0.00		0.00	0.15		0.00	0.15	0.00	915.00	915.00	0.04	0.02	920.92
Energy	0.59	5.11	2.87	0.03		0.00	0.40		0.00	0.40	0.00	14,499.26	14,499.26	0.50	0.26	14,589.07
Mobile	95.47	481.40	769.45	3.21	273.18	18.57	291.76	5.30	17.67	22.97	0.00	304,687.19	304,687.19	5.66	0.00	304,806.05

Waste						0.00	0.00		0.00	0.00	1,100.22	0.00	1,100.22	65.02	0.00	2,465.67
Water						0.00	0.00		0.00	0.00	0.00	627.19	627.19	3.07	0.23	762.69
Total	**120.93**	**486.69**	**787.70**	**3.24**	**273.18**	**18.57**	**292.31**	**5.30**	**17.67**	**23.52**	**1,100.22**	**320,728.64**	**321,828.86**	**74.29**	**0.51**	**323,544.40**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	24.87	0.18	15.38	0.00		0.00	0.15		0.00	0.15	0.00	915.00	915.00	0.04	0.02	920.92
Energy	0.59	5.11	2.87	0.03		0.00	0.40		0.00	0.40	0.00	14,499.26	14,499.26	0.50	0.26	14,589.07
Mobile	95.47	481.40	769.45	3.21	273.18	18.57	291.76	5.30	17.67	22.97	0.00	304,687.19	304,687.19	5.66	0.00	304,806.05
Waste						0.00	0.00		0.00	0.00	1,100.22	0.00	1,100.22	65.02	0.00	2,465.67
Water						0.00	0.00		0.00	0.00	0.00	627.19	627.19	3.07	0.23	762.69
Total	**120.93**	**486.69**	**787.70**	**3.24**	**273.18**	**18.57**	**292.31**	**5.30**	**17.67**	**23.52**	**1,100.22**	**320,728.64**	**321,828.86**	**74.29**	**0.51**	**323,544.40**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	95.47	481.40	769.45	3.21	273.18	18.57	291.76	5.30	17.67	22.97	0.00	304,687.19	304,687.19	5.66	0.00	304,806.05

Unmitigated	95.47	481.40	769.45	3.21	273.18	18.57	291.76	5.30	17.67	22.97	0.00	304,687.19	304,687.19	5.66	0.00	304,806.05
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,768.90	1,768.90	1768.90	18,543,732	18,543,732
General Office Building	5,793.52	5,793.52	5793.52	60,734,598	60,734,598
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	5,648.80	5,648.80	5648.80	59,217,500	59,217,500
Single Family Housing	17,111.16	17,111.16	17111.16	179,379,713	179,379,713
Strip Mall	9,207.00	9,207.00	9207.00	96,518,820	96,518,820
Total	47,627.38	47,627.38	47,627.38	499,287,316	499,287,316

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	8,698.74	8,698.74	0.39	0.15	8,753.26
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	8,698.74	8,698.74	0.39	0.15	8,753.26
NaturalGas Mitigated	0.59	5.11	2.87	0.03		0.00	0.40		0.00	0.40	0.00	5,800.51	5,800.51	0.11	0.11	5,835.82
NaturalGas Unmitigated	0.59	5.11	2.87	0.03		0.00	0.40		0.00	0.40	0.00	5,800.51	5,800.51	0.11	0.11	5,835.82
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	9.48748e+006	0.05	0.47	0.39	0.00		0.00	0.04		0.00	0.04	0.00	506.29	506.29	0.01	0.01	509.37
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	789306	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	42.12	42.12	0.00	0.00	42.38
Single Family Housing	6.83638e+007	0.37	3.15	1.34	0.02		0.00	0.25		0.00	0.25	0.00	3,648.15	3,648.15	0.07	0.07	3,670.35
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.58**	**5.12**	**2.86**	**0.02**		**0.00**	**0.39**		**0.00**	**0.39**	**0.00**	**5,800.52**	**5,800.52**	**0.12**	**0.12**	**5,835.82**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	9.48748e+006	0.05	0.47	0.39	0.00		0.00	0.04		0.00	0.04	0.00	506.29	506.29	0.01	0.01	509.37
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	789306	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	42.12	42.12	0.00	0.00	42.38
Single Family Housing	6.83638e+007	0.37	3.15	1.34	0.02		0.00	0.25		0.00	0.25	0.00	3,648.15	3,648.15	0.07	0.07	3,670.35
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.58**	**5.12**	**2.86**	**0.02**		**0.00**	**0.39**		**0.00**	**0.39**	**0.00**	**5,800.52**	**5,800.52**	**0.12**	**0.12**	**5,835.82**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	5.8514e+006					1,702.24	0.08	0.03	1,712.91
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.50889e+006					438.95	0.02	0.01	441.70
Single Family Housing	1.24499e+007					3,621.83	0.16	0.06	3,644.52
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**8,698.74**	**0.39**	**0.15**	**8,753.26**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			

Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	5.8514e+006					1,702.24	0.08	0.03	1,712.91
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.50889e+006					438.95	0.02	0.01	441.70
Single Family Housing	1.24499e+007					3,621.83	0.16	0.06	3,644.52
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**8,698.74**	**0.39**	**0.15**	**8,753.26**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	24.87	0.18	15.38	0.00		0.00	0.15		0.00	0.15	0.00	915.00	915.00	0.04	0.02	920.92
Unmitigated	24.87	0.18	15.38	0.00		0.00	0.15		0.00	0.15	0.00	915.00	915.00	0.04	0.02	920.92
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	4.39					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	19.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.09	0.00	0.00	0.00		0.00	0.06		0.00	0.06	0.00	889.81	889.81	0.02	0.02	895.22
Landscaping	0.46	0.18	15.37	0.00		0.00	0.09		0.00	0.09	0.00	25.20	25.20	0.02	0.00	25.70
Total	**24.87**	**0.18**	**15.37**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**915.01**	**915.01**	**0.04**	**0.02**	**920.92**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.39					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	19.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.09	0.00	0.00	0.00		0.00	0.06		0.00	0.06	0.00	889.81	889.81	0.02	0.02	895.22
Landscaping	0.46	0.18	15.37	0.00		0.00	0.09		0.00	0.09	0.00	25.20	25.20	0.02	0.00	25.70
Total	**24.87**	**0.18**	**15.37**	**0.00**		**0.00**	**0.15**		**0.00**	**0.15**	**0.00**	**915.01**	**915.01**	**0.04**	**0.02**	**920.92**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					627.19	3.07	0.23	762.69

Unmitigated					627.19	3.07	0.23	762.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	93.5253 / 57.3219					205.58	0.01	0.07	228.82
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	9.74424 / 5.97228					21.42	0.00	0.01	23.84
Single Family Housing	116.495 / 73.4428					258.16	2.66	0.09	342.67
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96
Total						**627.19**	**3.07**	**0.22**	**762.69**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	93.5253 / 57.3219					205.58	0.01	0.07	228.82
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	9.74424 / 5.97228					21.42	0.00	0.01	23.84
Single Family Housing	116.495 / 73.4428					258.16	2.66	0.09	342.67
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96

Total						**627.19**	**3.07**	**0.22**	**762.69**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					1,100.22	65.02	0.00	2,465.67
Unmitigated					1,100.22	65.02	0.00	2,465.67
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	489.38					99.34	5.87	0.00	222.63
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	138.13					28.04	1.66	0.00	62.84
Single Family Housing	2096.74					425.62	25.15	0.00	953.84
Strip Mall	167.81					34.06	2.01	0.00	76.34

Total						**1,100.22**	**65.02**	**0.00**	**2,465.67**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	489.38					99.34	5.87	0.00	222.63
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	138.13					28.04	1.66	0.00	62.84
Single Family Housing	2096.74					425.62	25.15	0.00	953.84
Strip Mall	167.81					34.06	2.01	0.00	76.34
Total						**1,100.22**	**65.02**	**0.00**	**2,465.67**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 5 Operation 2033

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	789.307	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	2688	Dwelling Unit
Regional Shopping Center	197.327	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	35.15	0.27	23.12	0.00		0.00	0.22		0.00	0.22	0.00	1,375.62	1,375.62	0.06	0.02	1,384.52
Energy	0.82	7.09	3.81	0.04		0.00	0.56		0.00	0.56	0.00	19,852.80	19,852.80	0.69	0.35	19,975.74
Mobile	126.01	635.40	1,015.59	4.24	360.57	24.52	385.09	6.99	23.32	30.32	0.00	402,155.83	402,155.83	7.47	0.00	402,312.71

Waste						0.00	0.00		0.00	0.00	1,390.68	0.00	1,390.68	82.19	0.00	3,116.61
Water						0.00	0.00		0.00	0.00	0.00	890.01	890.01	4.61	0.32	1,087.21
Total	**161.98**	**642.76**	**1,042.52**	**4.28**	**360.57**	**24.52**	**385.87**	**6.99**	**23.32**	**31.10**	**1,390.68**	**424,274.26**	**425,664.94**	**95.02**	**0.69**	**427,876.79**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	35.15	0.27	23.12	0.00		0.00	0.22		0.00	0.22	0.00	1,375.62	1,375.62	0.06	0.02	1,384.52
Energy	0.82	7.09	3.81	0.04		0.00	0.56		0.00	0.56	0.00	19,852.80	19,852.80	0.69	0.35	19,975.74
Mobile	126.01	635.40	1,015.59	4.24	360.57	24.52	385.09	6.99	23.32	30.32	0.00	402,155.83	402,155.83	7.47	0.00	402,312.71
Waste						0.00	0.00		0.00	0.00	1,390.68	0.00	1,390.68	82.19	0.00	3,116.61
Water						0.00	0.00		0.00	0.00	0.00	890.01	890.01	4.61	0.32	1,087.21
Total	**161.98**	**642.76**	**1,042.52**	**4.28**	**360.57**	**24.52**	**385.87**	**6.99**	**23.32**	**31.10**	**1,390.68**	**424,274.26**	**425,664.94**	**95.02**	**0.69**	**427,876.79**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	126.01	635.40	1,015.59	4.24	360.57	24.52	385.09	6.99	23.32	30.32	0.00	402,155.83	402,155.83	7.47	0.00	402,312.71

Unmitigated	126.01	635.40	1,015.59	4.24	360.57	24.52	385.09	6.99	23.32	30.32	0.00	402,155.83	402,155.83	7.47	0.00	402,312.71
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	8,690.27	8,690.27	8690.27	91,101,839	91,101,839
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	8,473.22	8,473.22	8473.22	88,826,474	88,826,474
Single Family Housing	25,724.16	25,724.16	25724.16	269,671,514	269,671,514
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	62,863.25	62,863.25	62,863.25	659,008,038	659,008,038

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	11,774.29	11,774.29	0.53	0.20	11,848.07
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	11,774.29	11,774.29	0.53	0.20	11,848.07
NaturalGas Mitigated	0.82	7.09	3.81	0.04		0.00	0.56		0.00	0.56	0.00	8,078.51	8,078.51	0.15	0.15	8,127.67
NaturalGas Unmitigated	0.82	7.09	3.81	0.04		0.00	0.56		0.00	0.56	0.00	8,078.51	8,078.51	0.15	0.15	8,127.67
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.42312e+007	0.08	0.70	0.59	0.00		0.00	0.05		0.00	0.05	0.00	759.43	759.43	0.01	0.01	764.05
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.18396e+006	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	63.18	63.18	0.00	0.00	63.57
Single Family Housing	1.02775e+008	0.55	4.74	2.02	0.03		0.00	0.38		0.00	0.38	0.00	5,484.47	5,484.47	0.11	0.10	5,517.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.82**	**7.10**	**3.82**	**0.03**		**0.00**	**0.54**		**0.00**	**0.54**	**0.00**	**8,078.51**	**8,078.51**	**0.16**	**0.15**	**8,127.68**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.42312e+007	0.08	0.70	0.59	0.00		0.00	0.05		0.00	0.05	0.00	759.43	759.43	0.01	0.01	764.05
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.18396e+006	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	63.18	63.18	0.00	0.00	63.57
Single Family Housing	1.02775e+008	0.55	4.74	2.02	0.03		0.00	0.38		0.00	0.38	0.00	5,484.47	5,484.47	0.11	0.10	5,517.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.82**	**7.10**	**3.82**	**0.03**		**0.00**	**0.54**		**0.00**	**0.54**	**0.00**	**8,078.51**	**8,078.51**	**0.16**	**0.15**	**8,127.68**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	8.77709e+006					2,553.36	0.12	0.04	2,569.36
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.26334e+006					658.43	0.03	0.01	662.56
Single Family Housing	1.87167e+007					5,444.90	0.25	0.09	5,479.02
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**11,774.29**	**0.53**	**0.19**	**11,848.09**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			

Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	8.77709e+006					2,553.36	0.12	0.04	2,569.36
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.26334e+006					658.43	0.03	0.01	662.56
Single Family Housing	1.87167e+007					5,444.90	0.25	0.09	5,479.02
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**11,774.29**	**0.53**	**0.19**	**11,848.09**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	35.15	0.27	23.12	0.00		0.00	0.22		0.00	0.22	0.00	1,375.62	1,375.62	0.06	0.02	1,384.52
Unmitigated	35.15	0.27	23.12	0.00		0.00	0.22		0.00	0.22	0.00	1,375.62	1,375.62	0.06	0.02	1,384.52
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	6.26					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	28.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.09		0.00	0.09	0.00	1,337.74	1,337.74	0.03	0.02	1,345.89
Landscaping	0.69	0.27	23.11	0.00		0.00	0.13		0.00	0.13	0.00	37.88	37.88	0.04	0.00	38.64
Total	**35.15**	**0.27**	**23.12**	**0.00**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**1,375.62**	**1,375.62**	**0.07**	**0.02**	**1,384.53**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.26					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	28.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.09		0.00	0.09	0.00	1,337.74	1,337.74	0.03	0.02	1,345.89
Landscaping	0.69	0.27	23.11	0.00		0.00	0.13		0.00	0.13	0.00	37.88	37.88	0.04	0.00	38.64
Total	**35.15**	**0.27**	**23.12**	**0.00**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**1,375.62**	**1,375.62**	**0.07**	**0.02**	**1,384.53**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					890.01	4.61	0.32	1,087.21

Unmitigated					890.01	4.61	0.32	1,087.21
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	140.287 / 85.9824					308.38	0.01	0.11	343.23
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	14.6167 / 8.95864					32.13	0.00	0.01	35.76
Single Family Housing	175.134 / 110.411					388.10	3.99	0.14	515.16
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**890.01**	**4.59**	**0.32**	**1,087.23**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	140.287 / 85.9824					308.38	0.01	0.11	343.23
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	14.6167 / 8.95864					32.13	0.00	0.01	35.76
Single Family Housing	175.134 / 110.411					388.10	3.99	0.14	515.16
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00

Total						**890.01**	**4.59**	**0.32**	**1,087.23**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					1,390.68	82.19	0.00	3,116.61
Unmitigated					1,390.68	82.19	0.00	3,116.61
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	734.06					149.01	8.81	0.00	333.94
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	207.2					42.06	2.49	0.00	94.26
Single Family Housing	3152.08					639.84	37.81	0.00	1,433.93
Strip Mall	168					34.10	2.02	0.00	76.43

Total						**1,390.68**	**82.20**	**0.00**	**3,116.62**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	734.06					149.01	8.81	0.00	333.94
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	207.2					42.06	2.49	0.00	94.26
Single Family Housing	3152.08					639.84	37.81	0.00	1,433.93
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,390.68**	**82.20**	**0.00**	**3,116.62**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 6 Operation 2037

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1052.41	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	2725	Dwelling Unit
Regional Shopping Center	263.102	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	37.00	0.27	23.38	0.00		0.00	0.22		0.00	0.22	0.00	1,392.11	1,392.11	0.06	0.02	1,401.11
Energy	0.85	7.41	4.05	0.05		0.00	0.59		0.00	0.59	0.00	21,348.04	21,348.04	0.75	0.38	21,480.29
Mobile	126.58	634.22	1,033.59	4.63	395.32	24.61	419.93	7.63	23.53	31.17	0.00	433,514.23	433,514.23	7.88	0.00	433,679.62
Waste						0.00	0.00		0.00	0.00	1,463.19	0.00	1,463.19	86.47	0.00	3,279.11
Water						0.00	0.00		0.00	0.00	0.00	1,008.86	1,008.86	4.67	0.37	1,220.63
Total	**164.43**	**641.90**	**1,061.02**	**4.68**	**395.32**	**24.61**	**420.74**	**7.63**	**23.53**	**31.98**	**1,463.19**	**457,263.24**	**458,726.43**	**99.83**	**0.77**	**461,060.76**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	37.00	0.27	23.38	0.00		0.00	0.22		0.00	0.22	0.00	1,392.11	1,392.11	0.06	0.02	1,401.11
Energy	0.85	7.41	4.05	0.05		0.00	0.59		0.00	0.59	0.00	21,348.04	21,348.04	0.75	0.38	21,480.29
Mobile	126.58	634.22	1,033.59	4.63	395.32	24.61	419.93	7.63	23.53	31.17	0.00	433,514.23	433,514.23	7.88	0.00	433,679.62
Waste						0.00	0.00		0.00	0.00	1,463.19	0.00	1,463.19	86.47	0.00	3,279.11
Water						0.00	0.00		0.00	0.00	0.00	1,008.86	1,008.86	4.67	0.37	1,220.63
Total	**164.43**	**641.90**	**1,061.02**	**4.68**	**395.32**	**24.61**	**420.74**	**7.63**	**23.53**	**31.98**	**1,463.19**	**457,263.24**	**458,726.43**	**99.83**	**0.77**	**461,060.76**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	126.58	634.22	1,033.59	4.63	395.32	24.61	419.93	7.63	23.53	31.17	0.00	433,514.23	433,514.23	7.88	0.00	433,679.62
Unmitigated	126.58	634.22	1,033.59	4.63	395.32	24.61	419.93	7.63	23.53	31.17	0.00	433,514.23	433,514.23	7.88	0.00	433,679.62
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	11,587.03	11,587.03	11587.03	121,469,196	121,469,196
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	11,297.60	11,297.60	11297.60	118,434,999	118,434,999
Single Family Housing	26,078.25	26,078.25	26078.25	273,383,510	273,383,510
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	68,938.48	68,938.48	68,938.48	722,695,915	722,695,915

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	12,919.83	12,919.83	0.58	0.22	13,000.79
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	12,919.83	12,919.83	0.58	0.22	13,000.79
NaturalGas Mitigated	0.85	7.41	4.05	0.05		0.00	0.59		0.00	0.59	0.00	8,428.21	8,428.21	0.16	0.15	8,479.50
NaturalGas Unmitigated	0.85	7.41	4.05	0.05		0.00	0.59		0.00	0.59	0.00	8,428.21	8,428.21	0.16	0.15	8,479.50
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.8975e+007	0.10	0.93	0.78	0.01		0.00	0.07		0.00	0.07	0.00	1,012.58	1,012.58	0.02	0.02	1,018.74
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.57861e+006	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	84.24	84.24	0.00	0.00	84.75
Single Family Housing	1.0419e+008	0.56	4.80	2.04	0.03		0.00	0.39		0.00	0.39	0.00	5,559.96	5,559.96	0.11	0.10	5,593.80
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.85**	**7.41**	**4.05**	**0.04**		**0.00**	**0.58**		**0.00**	**0.58**	**0.00**	**8,428.21**	**8,428.21**	**0.17**	**0.16**	**8,479.50**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.8975e+007	0.10	0.93	0.78	0.01		0.00	0.07		0.00	0.07	0.00	1,012.58	1,012.58	0.02	0.02	1,018.74
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.57861e+006	0.01	0.08	0.07	0.00		0.00	0.01		0.00	0.01	0.00	84.24	84.24	0.00	0.00	84.75
Single Family Housing	1.0419e+008	0.56	4.80	2.04	0.03		0.00	0.39		0.00	0.39	0.00	5,559.96	5,559.96	0.11	0.10	5,593.80
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.85**	**7.41**	**4.05**	**0.04**		**0.00**	**0.58**		**0.00**	**0.58**	**0.00**	**8,428.21**	**8,428.21**	**0.17**	**0.16**	**8,479.50**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.17028e+007					3,404.48	0.15	0.06	3,425.81
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.01778e+006					877.91	0.04	0.02	883.41
Single Family Housing	1.89743e+007					5,519.84	0.25	0.09	5,554.43
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**12,919.83**	**0.57**	**0.22**	**13,000.80**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.17028e+007					3,404.48	0.15	0.06	3,425.81
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.01778e+006					877.91	0.04	0.02	883.41
Single Family Housing	1.89743e+007					5,519.84	0.25	0.09	5,554.43
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**12,919.83**	**0.57**	**0.22**	**13,000.80**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	37.00	0.27	23.38	0.00		0.00	0.22		0.00	0.22	0.00	1,392.11	1,392.11	0.06	0.02	1,401.11
Unmitigated	37.00	0.27	23.38	0.00		0.00	0.22		0.00	0.22	0.00	1,392.11	1,392.11	0.06	0.02	1,401.11
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.56					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	29.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.09		0.00	0.09	0.00	1,353.77	1,353.77	0.03	0.02	1,362.01
Landscaping	0.70	0.27	23.37	0.00		0.00	0.13		0.00	0.13	0.00	38.33	38.33	0.04	0.00	39.10
Total	**37.01**	**0.27**	**23.38**	**0.00**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**1,392.10**	**1,392.10**	**0.07**	**0.02**	**1,401.11**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.56					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	29.61					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.09		0.00	0.09	0.00	1,353.77	1,353.77	0.03	0.02	1,362.01
Landscaping	0.70	0.27	23.37	0.00		0.00	0.13		0.00	0.13	0.00	38.33	38.33	0.04	0.00	39.10
Total	**37.01**	**0.27**	**23.38**	**0.00**		**0.00**	**0.22**		**0.00**	**0.22**	**0.00**	**1,392.10**	**1,392.10**	**0.07**	**0.02**	**1,401.11**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr				MT/yr			
Mitigated					1,008.86	4.67	0.37	1,220.63
Unmitigated					1,008.86	4.67	0.37	1,220.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	187.049 / 114.643					411.17	0.02	0.15	457.64
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	19.4885 / 11.9446					42.84	0.00	0.02	47.68
Single Family Housing	177.545 / 111.93					393.44	4.05	0.14	522.25
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,008.85**	**4.66**	**0.37**	**1,220.65**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	187.049 / 114.643					411.17	0.02	0.15	457.64
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	19.4885 / 11.9446					42.84	0.00	0.02	47.68

Single Family Housing	177.545 / 111.93					393.44	4.05	0.14	522.25
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,008.85**	**4.66**	**0.37**	**1,220.65**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					1,463.19	86.47	0.00	3,279.11
Unmitigated					1,463.19	86.47	0.00	3,279.11
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	978.74					198.68	11.74	0.00	445.24
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	276.26					56.08	3.31	0.00	125.68
Single Family Housing	3195.54					648.67	38.34	0.00	1,453.70

Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,463.20**	**86.48**	**0.00**	**3,279.11**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	978.74					198.68	11.74	0.00	445.24
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	276.26					56.08	3.31	0.00	125.68
Single Family Housing	3195.54					648.67	38.34	0.00	1,453.70
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,463.20**	**86.48**	**0.00**	**3,279.11**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

CCH Avoidance MSHCP Alternative Phase 7 Operation 2041

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1315.512	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	2761	Dwelling Unit
Regional Shopping Center	328.878	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	38.83	0.27	23.63	0.00		0.00	0.23		0.00	0.23	0.00	1,408.14	1,408.14	0.06	0.03	1,417.25
Energy	0.89	7.72	4.29	0.05		0.00	0.61		0.00	0.61	0.00	22,839.21	22,839.21	0.80	0.40	22,980.75
Mobile	131.91	659.61	1,077.11	5.02	430.03	26.44	456.47	8.28	25.11	33.39	0.00	466,838.08	466,838.08	8.35	0.00	467,013.48
Waste						0.00	0.00		0.00	0.00	1,535.37	0.00	1,535.37	90.74	0.00	3,440.86
Water						0.00	0.00		0.00	0.00	0.00	1,127.55	1,127.55	4.73	0.41	1,353.86
Total	**171.63**	**667.60**	**1,105.03**	**5.07**	**430.03**	**26.44**	**457.31**	**8.28**	**25.11**	**34.23**	**1,535.37**	**492,212.98**	**493,748.35**	**104.68**	**0.84**	**496,206.20**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	38.83	0.27	23.63	0.00		0.00	0.23		0.00	0.23	0.00	1,408.14	1,408.14	0.06	0.03	1,417.25
Energy	0.89	7.72	4.29	0.05		0.00	0.61		0.00	0.61	0.00	22,839.21	22,839.21	0.80	0.40	22,980.75
Mobile	131.91	659.61	1,077.11	5.02	430.03	26.44	456.47	8.28	25.11	33.39	0.00	466,838.08	466,838.08	8.35	0.00	467,013.48
Waste						0.00	0.00		0.00	0.00	1,535.37	0.00	1,535.37	90.74	0.00	3,440.86
Water						0.00	0.00		0.00	0.00	0.00	1,127.55	1,127.55	4.73	0.41	1,353.86
Total	**171.63**	**667.60**	**1,105.03**	**5.07**	**430.03**	**26.44**	**457.31**	**8.28**	**25.11**	**34.23**	**1,535.37**	**492,212.98**	**493,748.35**	**104.68**	**0.84**	**496,206.20**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Mitigated	131.91	659.61	1,077.11	5.02	430.03	26.44	456.47	8.28	25.11	33.39	0.00	466,838.08	466,838.08	8.35	0.00	467,013.48
Unmitigated	131.91	659.61	1,077.11	5.02	430.03	26.44	456.47	8.28	25.11	33.39	0.00	466,838.08	466,838.08	8.35	0.00	467,013.48
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	14,483.79	14,483.79	14483.79	151,836,437	151,836,437
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	14,122.02	14,122.02	14122.02	148,043,974	148,043,974
Single Family Housing	26,422.77	26,422.77	26422.77	276,995,182	276,995,182
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	75,004.18	75,004.18	75,004.18	786,283,803	786,283,803

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	14,063.35	14,063.35	0.64	0.24	14,151.48
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	14,063.35	14,063.35	0.64	0.24	14,151.48
NaturalGas Mitigated	0.89	7.72	4.29	0.05		0.00	0.61		0.00	0.61	0.00	8,775.86	8,775.86	0.17	0.16	8,829.27
NaturalGas Unmitigated	0.89	7.72	4.29	0.05		0.00	0.61		0.00	0.61	0.00	8,775.86	8,775.86	0.17	0.16	8,829.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.37187e+007	0.13	1.16	0.98	0.01		0.00	0.09		0.00	0.09	0.00	1,265.72	1,265.72	0.02	0.02	1,273.42
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.97327e+006	0.01	0.10	0.08	0.00		0.00	0.01		0.00	0.01	0.00	105.30	105.30	0.00	0.00	105.94
Single Family Housing	1.05566e+008	0.57	4.86	2.07	0.03		0.00	0.39		0.00	0.39	0.00	5,633.42	5,633.42	0.11	0.10	5,667.70
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.89**	**7.72**	**4.29**	**0.04**		**0.00**	**0.60**		**0.00**	**0.60**	**0.00**	**8,775.87**	**8,775.87**	**0.17**	**0.16**	**8,829.27**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					

Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.37187e+007	0.13	1.16	0.98	0.01		0.00	0.09		0.00	0.09	0.00	1,265.72	1,265.72	0.02	0.02	1,273.42
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.97327e+006	0.01	0.10	0.08	0.00		0.00	0.01		0.00	0.01	0.00	105.30	105.30	0.00	0.00	105.94
Single Family Housing	1.05566e+008	0.57	4.86	2.07	0.03		0.00	0.39		0.00	0.39	0.00	5,633.42	5,633.42	0.11	0.10	5,667.70
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**0.89**	**7.72**	**4.29**	**0.04**		**0.00**	**0.60**		**0.00**	**0.60**	**0.00**	**8,775.87**	**8,775.87**	**0.17**	**0.16**	**8,829.27**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.46285e+007					4,255.60	0.19	0.07	4,282.26
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.77223e+006					1,097.39	0.05	0.02	1,104.26
Single Family Housing	1.9225e+007					5,592.77	0.25	0.10	5,627.81
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**14,063.36**	**0.62**	**0.24**	**14,151.48**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48

General Office Building	1.46285e+007					4,255.60	0.19	0.07	4,282.26
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.77223e+006					1,097.39	0.05	0.02	1,104.26
Single Family Housing	1.9225e+007					5,592.77	0.25	0.10	5,627.81
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**14,063.36**	**0.62**	**0.24**	**14,151.48**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	38.83	0.27	23.63	0.00		0.00	0.23		0.00	0.23	0.00	1,408.14	1,408.14	0.06	0.03	1,417.25
Unmitigated	38.83	0.27	23.63	0.00		0.00	0.23		0.00	0.23	0.00	1,408.14	1,408.14	0.06	0.03	1,417.25
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.84					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	31.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.10		0.00	0.09	0.00	1,369.37	1,369.37	0.03	0.03	1,377.70

Landscaping	0.71	0.27	23.62	0.00		0.00	0.13		0.00	0.13	0.00	38.77	38.77	0.04	0.00	39.55
Total	**38.83**	**0.27**	**23.63**	**0.00**		**0.00**	**0.23**		**0.00**	**0.22**	**0.00**	**1,408.14**	**1,408.14**	**0.07**	**0.03**	**1,417.25**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.84					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	31.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.14	0.00	0.01	0.00		0.00	0.10		0.00	0.09	0.00	1,369.37	1,369.37	0.03	0.03	1,377.70
Landscaping	0.71	0.27	23.62	0.00		0.00	0.13		0.00	0.13	0.00	38.77	38.77	0.04	0.00	39.55
Total	**38.83**	**0.27**	**23.63**	**0.00**		**0.00**	**0.23**		**0.00**	**0.22**	**0.00**	**1,408.14**	**1,408.14**	**0.07**	**0.03**	**1,417.25**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,127.55	4.73	0.41	1,353.86
Unmitigated					1,127.55	4.73	0.41	1,353.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	233.811 / 143.303					513.96	0.02	0.19	572.05
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	24.361 / 14.9309					53.55	0.00	0.02	59.60
Single Family Housing	179.89 / 113.409					398.64	4.10	0.14	529.15
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,127.55**	**4.71**	**0.41**	**1,353.88**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	233.811 / 143.303					513.96	0.02	0.19	572.05
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	24.361 / 14.9309					53.55	0.00	0.02	59.60
Single Family Housing	179.89 / 113.409					398.64	4.10	0.14	529.15
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,127.55**	**4.71**	**0.41**	**1,353.88**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					1,535.37	90.74	0.00	3,440.86
Unmitigated					1,535.37	90.74	0.00	3,440.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			

Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1223.42					248.34	14.68	0.00	556.55
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	345.32					70.10	4.14	0.00	157.09
Single Family Housing	3237.36					657.15	38.84	0.00	1,472.73
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,535.36**	**90.75**	**0.00**	**3,440.86**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1223.42					248.34	14.68	0.00	556.55
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	345.32					70.10	4.14	0.00	157.09
Single Family Housing	3237.36					657.15	38.84	0.00	1,472.73
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**1,535.36**	**90.75**	**0.00**	**3,440.86**

9.0 Vegetation

CalEEMod Construction Emissions for the Kern County General Plan Buildout Alternative San Joaquin Valley Air Basin

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 1 Construction 2013-2016

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Recreational	323.5	User Defined Unit
Apartments Low Rise	64	Dwelling Unit
Single Family Housing	485	Dwelling Unit
Strip Mall	86.36	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	3.56	25.76	15.36	0.03	0.67	1.49	2.16	0.06	1.49	1.55	0.00	2,806.51	2,806.51	0.29	0.00	2,812.54
2014	7.03	22.76	17.76	0.04	0.83	1.27	2.10	0.04	1.27	1.31	0.00	3,289.03	3,289.03	0.27	0.00	3,294.67
2015	7.12	20.67	17.20	0.04	0.84	1.13	1.97	0.04	1.13	1.17	0.00	3,285.54	3,285.54	0.25	0.00	3,290.77
2016	6.87	18.73	16.68	0.04	0.84	1.00	1.85	0.04	1.00	1.04	0.00	3,273.19	3,273.19	0.23	0.00	3,277.99
Total	**24.58**	**87.92**	**67.00**	**0.15**	**3.18**	**4.89**	**8.08**	**0.18**	**4.89**	**5.07**	**0.00**	**12,654.27**	**12,654.27**	**1.04**	**0.00**	**12,675.97**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	3.56	25.76	15.36	0.03	0.38	1.49	1.87	0.03	1.49	1.52	0.00	2,806.51	2,806.51	0.29	0.00	2,812.54
2014	7.03	22.76	17.76	0.04	0.83	1.27	2.10	0.04	1.27	1.31	0.00	3,289.03	3,289.03	0.27	0.00	3,294.67

2015	7.12	20.67	17.20	0.04	0.84	1.13	1.97	0.04	1.13	1.17	0.00	3,285.54	3,285.54	0.25	0.00	3,290.77
2016	6.87	18.73	16.68	0.04	0.84	1.00	1.85	0.04	1.00	1.04	0.00	3,273.19	3,273.19	0.23	0.00	3,277.99
Total	**24.58**	**87.92**	**67.00**	**0.15**	**2.89**	**4.89**	**7.79**	**0.15**	**4.89**	**5.04**	**0.00**	**12,654.27**	**12,654.27**	**1.04**	**0.00**	**12,675.97**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	1.82	14.54	7.65	0.02		0.71	0.71		0.71	0.71	0.00	1,565.36	1,565.36	0.15	0.00	1,568.45
Total	**1.82**	**14.54**	**7.65**	**0.02**	**0.48**	**0.71**	**1.19**	**0.05**	**0.71**	**0.76**	**0.00**	**1,565.36**	**1,565.36**	**0.15**	**0.00**	**1,568.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	30.24	30.24	0.00	0.00	30.28
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**30.24**	**30.24**	**0.00**	**0.00**	**30.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.19	0.00	0.19	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.82	14.54	7.65	0.02		0.71	0.71		0.71	0.71	0.00	1,565.36	1,565.36	0.15	0.00	1,568.45
Total	**1.82**	**14.54**	**7.65**	**0.02**	**0.19**	**0.71**	**0.90**	**0.02**	**0.71**	**0.73**	**0.00**	**1,565.36**	**1,565.36**	**0.15**	**0.00**	**1,568.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	30.24	30.24	0.00	0.00	30.28
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**30.24**	**30.24**	**0.00**	**0.00**	**30.28**

3.3 Trenching - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.48	3.26	1.98	0.00		0.20	0.20		0.20	0.20	0.00	353.02	353.02	0.04	0.00	353.83
Total	**0.48**	**3.26**	**1.98**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**353.02**	**353.02**	**0.04**	**0.00**	**353.83**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	11.09	11.09	0.00	0.00	11.11
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.09**	**11.09**	**0.00**	**0.00**	**11.11**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.48	3.26	1.98	0.00		0.20	0.20		0.20	0.20	0.00	353.02	353.02	0.04	0.00	353.83
Total	**0.48**	**3.26**	**1.98**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**353.02**	**353.02**	**0.04**	**0.00**	**353.83**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	11.09	11.09	0.00	0.00	11.11
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.09**	**11.09**	**0.00**	**0.00**	**11.11**

3.4 Paving - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.64	3.90	2.41	0.00		0.34	0.34		0.34	0.34	0.00	305.63	305.63	0.05	0.00	306.72
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.64**	**3.90**	**2.41**	**0.00**		**0.34**	**0.34**		**0.34**	**0.34**	**0.00**	**305.63**	**305.63**	**0.05**	**0.00**	**306.72**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	15.47	15.47	0.00	0.00	15.49
Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**15.47**	**15.47**	**0.00**	**0.00**	**15.49**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.64	3.90	2.41	0.00		0.34	0.34		0.34	0.34	0.00	305.63	305.63	0.05	0.00	306.72
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.64**	**3.90**	**2.41**	**0.00**		**0.34**	**0.34**		**0.34**	**0.34**	**0.00**	**305.63**	**305.63**	**0.05**	**0.00**	**306.72**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	15.47	15.47	0.00	0.00	15.49

Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**15.47**	**15.47**	**0.00**	**0.00**	**15.49**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.45	2.12	0.00		0.21	0.21		0.21	0.21	0.00	384.19	384.19	0.04	0.00	385.04
Total	**0.50**	**3.45**	**2.12**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**384.19**	**384.19**	**0.04**	**0.00**	**385.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.26	0.00	0.02	0.02	0.04	0.00	0.02	0.02	0.00	68.47	68.47	0.00	0.00	68.51
Worker	0.05	0.05	0.52	0.00	0.10	0.00	0.10	0.00	0.00	0.01	0.00	73.03	73.03	0.00	0.00	73.12
Total	**0.09**	**0.56**	**0.78**	**0.00**	**0.12**	**0.02**	**0.14**	**0.00**	**0.02**	**0.03**	**0.00**	**141.50**	**141.50**	**0.00**	**0.00**	**141.63**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.45	2.12	0.00		0.21	0.21		0.21	0.21	0.00	384.19	384.19	0.04	0.00	385.04

Total	**0.50**	**3.45**	**2.12**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**384.19**	**384.19**	**0.04**	**0.00**	**385.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.51	0.26	0.00	0.02	0.02	0.04	0.00	0.02	0.02	0.00	68.47	68.47	0.00	0.00	68.51
Worker	0.05	0.05	0.52	0.00	0.10	0.00	0.10	0.00	0.00	0.01	0.00	73.03	73.03	0.00	0.00	73.12
Total	**0.09**	**0.56**	**0.78**	**0.00**	**0.12**	**0.02**	**0.14**	**0.00**	**0.02**	**0.03**	**0.00**	**141.50**	**141.50**	**0.00**	**0.00**	**141.63**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.79	19.27	12.72	0.03		1.12	1.12		1.12	1.12	0.00	2,331.94	2,331.94	0.23	0.00	2,336.68
Total	**2.79**	**19.27**	**12.72**	**0.03**		**1.12**	**1.12**		**1.12**	**1.12**	**0.00**	**2,331.94**	**2,331.94**	**0.23**	**0.00**	**2,336.68**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.81	1.46	0.00	0.14	0.09	0.23	0.01	0.09	0.10	0.00	415.08	415.08	0.01	0.00	415.30
Worker	0.26	0.30	2.83	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	432.57	432.57	0.02	0.00	433.07
Total	**0.50**	**3.11**	**4.29**	**0.00**	**0.73**	**0.11**	**0.84**	**0.03**	**0.11**	**0.14**	**0.00**	**847.65**	**847.65**	**0.03**	**0.00**	**848.37**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.79	19.27	12.72	0.03		1.12	1.12		1.12	1.12	0.00	2,331.94	2,331.94	0.23	0.00	2,336.68
Total	**2.79**	**19.27**	**12.72**	**0.03**		**1.12**	**1.12**		**1.12**	**1.12**	**0.00**	**2,331.94**	**2,331.94**	**0.23**	**0.00**	**2,336.68**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.81	1.46	0.00	0.14	0.09	0.23	0.01	0.09	0.10	0.00	415.08	415.08	0.01	0.00	415.30
Worker	0.26	0.30	2.83	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	432.57	432.57	0.02	0.00	433.07
Total	**0.50**	**3.11**	**4.29**	**0.00**	**0.73**	**0.11**	**0.84**	**0.03**	**0.11**	**0.14**	**0.00**	**847.65**	**847.65**	**0.03**	**0.00**	**848.37**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.57	17.46	12.57	0.03		1.00	1.00		1.00	1.00	0.00	2,331.94	2,331.94	0.21	0.00	2,336.32
Total	**2.57**	**17.46**	**12.57**	**0.03**		**1.00**	**1.00**		**1.00**	**1.00**	**0.00**	**2,331.94**	**2,331.94**	**0.21**	**0.00**	**2,336.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.35	0.00	0.14	0.08	0.22	0.01	0.08	0.10	0.00	414.61	414.61	0.01	0.00	414.80
Worker	0.24	0.26	2.52	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	421.25	421.25	0.02	0.00	421.71
Total	**0.46**	**2.82**	**3.87**	**0.00**	**0.73**	**0.10**	**0.83**	**0.03**	**0.10**	**0.14**	**0.00**	**835.86**	**835.86**	**0.03**	**0.00**	**836.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.57	17.46	12.57	0.03		1.00	1.00		1.00	1.00	0.00	2,331.94	2,331.94	0.21	0.00	2,336.32
Total	**2.57**	**17.46**	**12.57**	**0.03**		**1.00**	**1.00**		**1.00**	**1.00**	**0.00**	**2,331.94**	**2,331.94**	**0.21**	**0.00**	**2,336.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.35	0.00	0.14	0.08	0.22	0.01	0.08	0.10	0.00	414.61	414.61	0.01	0.00	414.80
Worker	0.24	0.26	2.52	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	421.25	421.25	0.02	0.00	421.71
Total	**0.46**	**2.82**	**3.87**	**0.00**	**0.73**	**0.10**	**0.83**	**0.03**	**0.10**	**0.14**	**0.00**	**835.86**	**835.86**	**0.03**	**0.00**	**836.51**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.37	15.81	12.45	0.03		0.88	0.88		0.88	0.88	0.00	2,331.94	2,331.94	0.19	0.00	2,335.97
Total	**2.37**	**15.81**	**12.45**	**0.03**		**0.88**	**0.88**		**0.88**	**0.88**	**0.00**	**2,331.94**	**2,331.94**	**0.19**	**0.00**	**2,335.97**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.32	1.26	0.00	0.14	0.07	0.21	0.01	0.07	0.09	0.00	414.13	414.13	0.01	0.00	414.31
Worker	0.22	0.24	2.28	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	411.36	411.36	0.02	0.00	411.78
Total	**0.42**	**2.56**	**3.54**	**0.00**	**0.73**	**0.09**	**0.82**	**0.03**	**0.09**	**0.13**	**0.00**	**825.49**	**825.49**	**0.03**	**0.00**	**826.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.37	15.81	12.45	0.03		0.88	0.88		0.88	0.88	0.00	2,331.94	2,331.94	0.19	0.00	2,335.97
Total	**2.37**	**15.81**	**12.45**	**0.03**		**0.88**	**0.88**		**0.88**	**0.88**	**0.00**	**2,331.94**	**2,331.94**	**0.19**	**0.00**	**2,335.97**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.32	1.26	0.00	0.14	0.07	0.21	0.01	0.07	0.09	0.00	414.13	414.13	0.01	0.00	414.31
Worker	0.22	0.24	2.28	0.00	0.59	0.02	0.61	0.02	0.02	0.04	0.00	411.36	411.36	0.02	0.00	411.78
Total	**0.42**	**2.56**	**3.54**	**0.00**	**0.73**	**0.09**	**0.82**	**0.03**	**0.09**	**0.13**	**0.00**	**825.49**	**825.49**	**0.03**	**0.00**	**826.09**

3.6 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.03	0.03		0.03	0.03	0.00	30.35	30.35	0.00	0.00	30.44

Total	**3.69**	**0.33**	**0.23**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**30.35**	**30.35**	**0.00**	**0.00**	**30.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.11	0.00	0.11	0.00	0.00	0.01	0.00	79.09	79.09	0.00	0.00	79.19
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.11**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**	**0.00**	**79.09**	**79.09**	**0.00**	**0.00**	**79.19**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.03	0.03		0.03	0.03	0.00	30.35	30.35	0.00	0.00	30.44
Total	**3.69**	**0.33**	**0.23**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**30.35**	**30.35**	**0.00**	**0.00**	**30.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.11	0.00	0.11	0.00	0.00	0.01	0.00	79.09	79.09	0.00	0.00	79.19
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.11**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**	**0.00**	**79.09**	**79.09**	**0.00**	**0.00**	**79.19**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.34	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.37
Total	**4.05**	**0.34**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.37**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.51	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	84.47	84.47	0.00	0.00	84.56
Total	**0.05**	**0.05**	**0.51**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**84.47**	**84.47**	**0.00**	**0.00**	**84.56**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.34	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.37
Total	**4.05**	**0.34**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.37**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.51	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	84.47	84.47	0.00	0.00	84.56
Total	**0.05**	**0.05**	**0.51**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**84.47**	**84.47**	**0.00**	**0.00**	**84.56**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.31	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.36
Total	**4.05**	**0.31**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.36**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.05	0.46	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	82.49	82.49	0.00	0.00	82.57
Total	**0.04**	**0.05**	**0.46**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**82.49**	**82.49**	**0.00**	**0.00**	**82.57**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.31	0.25	0.00		0.03	0.03		0.03	0.03	0.00	33.28	33.28	0.00	0.00	33.36
Total	**4.05**	**0.31**	**0.25**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.36**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.05	0.46	0.00	0.12	0.00	0.12	0.00	0.00	0.01	0.00	82.49	82.49	0.00	0.00	82.57

Total	**0.04**	**0.05**	**0.46**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.01**	**0.00**	**82.49**	**82.49**	**0.00**	**0.00**	**82.57**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 2 Construction 2017-2020

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Apartments Low Rise	92	Dwelling Unit
Single Family Housing	704	Dwelling Unit
Strip Mall	92.943	1000sqft
User Defined Recreational	323.498	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	9.98	39.85	34.20	0.07	1.91	2.17	4.08	0.14	2.17	2.30	0.00	6,726.93	6,726.93	0.49	0.00	6,737.19
2018	6.60	16.79	17.94	0.04	1.06	0.85	1.91	0.02	0.84	0.86	0.00	3,653.63	3,653.63	0.21	0.00	3,658.11
2019	6.38	15.18	17.54	0.04	1.06	0.74	1.79	0.02	0.73	0.75	0.00	3,641.00	3,641.00	0.20	0.00	3,645.13
2020	6.22	13.80	17.27	0.04	1.06	0.64	1.70	0.02	0.63	0.65	0.00	3,643.51	3,643.51	0.18	0.00	3,647.34
Total	**29.18**	**85.62**	**86.95**	**0.19**	**5.09**	**4.40**	**9.48**	**0.20**	**4.37**	**4.56**	**0.00**	**17,665.07**	**17,665.07**	**1.08**	**0.00**	**17,687.77**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	9.98	39.85	34.20	0.07	1.45	2.17	3.62	0.09	2.17	2.25	0.00	6,726.93	6,726.93	0.49	0.00	6,737.19
2018	6.60	16.79	17.94	0.04	1.06	0.85	1.91	0.02	0.84	0.86	0.00	3,653.63	3,653.63	0.21	0.00	3,658.11

2019	6.38	15.18	17.54	0.04	1.06	0.74	1.79	0.02	0.73	0.75	0.00	3,641.00	3,641.00	0.20	0.00	3,645.13
2020	6.22	13.80	17.27	0.04	1.06	0.64	1.70	0.02	0.63	0.65	0.00	3,643.51	3,643.51	0.18	0.00	3,647.34
Total	**29.18**	**85.62**	**86.95**	**0.19**	**4.63**	**4.40**	**9.02**	**0.15**	**4.37**	**4.51**	**0.00**	**17,665.07**	**17,665.07**	**1.08**	**0.00**	**17,687.77**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.76	0.00	0.76	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	2.07	14.67	10.23	0.02		0.70	0.70		0.70	0.70	0.00	2,213.12	2,213.12	0.17	0.00	2,216.63
Total	**2.07**	**14.67**	**10.23**	**0.02**	**0.76**	**0.70**	**1.46**	**0.08**	**0.70**	**0.78**	**0.00**	**2,213.12**	**2,213.12**	**0.17**	**0.00**	**2,216.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	40.63	40.63	0.00	0.00	40.67
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**40.63**	**40.63**	**0.00**	**0.00**	**40.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.30	0.00	0.30	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	2.07	14.67	10.23	0.02		0.70	0.70		0.70	0.70	0.00	2,213.12	2,213.12	0.17	0.00	2,216.63
Total	**2.07**	**14.67**	**10.23**	**0.02**	**0.30**	**0.70**	**1.00**	**0.03**	**0.70**	**0.73**	**0.00**	**2,213.12**	**2,213.12**	**0.17**	**0.00**	**2,216.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	40.63	40.63	0.00	0.00	40.67
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**40.63**	**40.63**	**0.00**	**0.00**	**40.67**

3.3 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.35	15.38	13.61	0.03		0.84	0.84		0.84	0.84	0.00	2,513.78	2,513.78	0.19	0.00	2,517.78
Total	**2.35**	**15.38**	**13.61**	**0.03**		**0.84**	**0.84**		**0.84**	**0.84**	**0.00**	**2,513.78**	**2,513.78**	**0.19**	**0.00**	**2,517.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.41	0.01	0.17	0.08	0.25	0.01	0.08	0.09	0.00	500.41	500.41	0.01	0.00	500.61
Worker	0.25	0.27	2.59	0.01	0.74	0.03	0.76	0.03	0.03	0.06	0.00	505.27	505.27	0.02	0.00	505.76
Total	**0.47**	**2.83**	**4.00**	**0.02**	**0.91**	**0.11**	**1.01**	**0.04**	**0.11**	**0.15**	**0.00**	**1,005.68**	**1,005.68**	**0.03**	**0.00**	**1,006.37**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.35	15.38	13.61	0.03		0.84	0.84		0.84	0.84	0.00	2,513.78	2,513.78	0.19	0.00	2,517.78
Total	**2.35**	**15.38**	**13.61**	**0.03**		**0.84**	**0.84**		**0.84**	**0.84**	**0.00**	**2,513.78**	**2,513.78**	**0.19**	**0.00**	**2,517.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.56	1.41	0.01	0.17	0.08	0.25	0.01	0.08	0.09	0.00	500.41	500.41	0.01	0.00	500.61
Worker	0.25	0.27	2.59	0.01	0.74	0.03	0.76	0.03	0.03	0.06	0.00	505.27	505.27	0.02	0.00	505.76
Total	**0.47**	**2.83**	**4.00**	**0.02**	**0.91**	**0.11**	**1.01**	**0.04**	**0.11**	**0.15**	**0.00**	**1,005.68**	**1,005.68**	**0.03**	**0.00**	**1,006.37**

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.17	13.90	13.56	0.03		0.73	0.73		0.73	0.73	0.00	2,523.45	2,523.45	0.18	0.00	2,527.14
Total	**2.17**	**13.90**	**13.56**	**0.03**		**0.73**	**0.73**		**0.73**	**0.73**	**0.00**	**2,523.45**	**2,523.45**	**0.18**	**0.00**	**2,527.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.34	1.33	0.01	0.17	0.07	0.24	0.00	0.07	0.07	0.00	501.84	501.84	0.01	0.00	502.02
Worker	0.23	0.24	2.35	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	495.89	495.89	0.02	0.00	496.34
Total	**0.43**	**2.58**	**3.68**	**0.02**	**0.91**	**0.10**	**1.01**	**0.01**	**0.09**	**0.10**	**0.00**	**997.73**	**997.73**	**0.03**	**0.00**	**998.36**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.17	13.90	13.56	0.03		0.73	0.73		0.73	0.73	0.00	2,523.45	2,523.45	0.18	0.00	2,527.14
Total	**2.17**	**13.90**	**13.56**	**0.03**		**0.73**	**0.73**		**0.73**	**0.73**	**0.00**	**2,523.45**	**2,523.45**	**0.18**	**0.00**	**2,527.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.34	1.33	0.01	0.17	0.07	0.24	0.00	0.07	0.07	0.00	501.84	501.84	0.01	0.00	502.02
Worker	0.23	0.24	2.35	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	495.89	495.89	0.02	0.00	496.34

Total	**0.43**	**2.58**	**3.68**	**0.02**	**0.91**	**0.10**	**1.01**	**0.01**	**0.09**	**0.10**	**0.00**	**997.73**	**997.73**	**0.03**	**0.00**	**998.36**

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.99	12.53	13.47	0.03		0.63	0.63		0.63	0.63	0.00	2,523.45	2,523.45	0.16	0.00	2,526.85
Total	**1.99**	**12.53**	**13.47**	**0.03**		**0.63**	**0.63**		**0.63**	**0.63**	**0.00**	**2,523.45**	**2,523.45**	**0.16**	**0.00**	**2,526.85**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.15	1.25	0.01	0.17	0.06	0.23	0.00	0.06	0.06	0.00	501.43	501.43	0.01	0.00	501.60
Worker	0.22	0.22	2.15	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	485.71	485.71	0.02	0.00	486.12
Total	**0.40**	**2.37**	**3.40**	**0.02**	**0.91**	**0.09**	**1.00**	**0.01**	**0.08**	**0.09**	**0.00**	**987.14**	**987.14**	**0.03**	**0.00**	**987.72**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.99	12.53	13.47	0.03		0.63	0.63		0.63	0.63	0.00	2,523.45	2,523.45	0.16	0.00	2,526.85

Total	**1.99**	**12.53**	**13.47**	**0.03**		**0.63**	**0.63**		**0.63**	**0.63**	**0.00**	**2,523.45**	**2,523.45**	**0.16**	**0.00**	**2,526.85**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.15	1.25	0.01	0.17	0.06	0.23	0.00	0.06	0.06	0.00	501.43	501.43	0.01	0.00	501.60
Worker	0.22	0.22	2.15	0.01	0.74	0.03	0.77	0.01	0.02	0.03	0.00	485.71	485.71	0.02	0.00	486.12
Total	**0.40**	**2.37**	**3.40**	**0.02**	**0.91**	**0.09**	**1.00**	**0.01**	**0.08**	**0.09**	**0.00**	**987.14**	**987.14**	**0.03**	**0.00**	**987.72**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.84	11.34	13.45	0.03		0.54	0.54		0.54	0.54	0.00	2,533.12	2,533.12	0.15	0.00	2,536.26
Total	**1.84**	**11.34**	**13.45**	**0.03**		**0.54**	**0.54**		**0.54**	**0.54**	**0.00**	**2,533.12**	**2,533.12**	**0.15**	**0.00**	**2,536.26**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.17	2.00	1.19	0.01	0.17	0.06	0.23	0.00	0.05	0.06	0.00	503.00	503.00	0.01	0.00	503.15
Worker	0.21	0.20	1.99	0.01	0.75	0.03	0.77	0.01	0.02	0.03	0.00	478.32	478.32	0.02	0.00	478.72
Total	**0.38**	**2.20**	**3.18**	**0.02**	**0.92**	**0.09**	**1.00**	**0.01**	**0.07**	**0.09**	**0.00**	**981.32**	**981.32**	**0.03**	**0.00**	**981.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.84	11.34	13.45	0.03		0.54	0.54		0.54	0.54	0.00	2,533.12	2,533.12	0.15	0.00	2,536.26
Total	**1.84**	**11.34**	**13.45**	**0.03**		**0.54**	**0.54**		**0.54**	**0.54**	**0.00**	**2,533.12**	**2,533.12**	**0.15**	**0.00**	**2,536.26**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.17	2.00	1.19	0.01	0.17	0.06	0.23	0.00	0.05	0.06	0.00	503.00	503.00	0.01	0.00	503.15
Worker	0.21	0.20	1.99	0.01	0.75	0.03	0.77	0.01	0.02	0.03	0.00	478.32	478.32	0.02	0.00	478.72
Total	**0.38**	**2.20**	**3.18**	**0.02**	**0.92**	**0.09**	**1.00**	**0.01**	**0.07**	**0.09**	**0.00**	**981.32**	**981.32**	**0.03**	**0.00**	**981.87**

3.4 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.89					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.28	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.15	33.15	0.00	0.00	33.23
Total	**3.93**	**0.28**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.15	0.01	0.15	0.01	0.01	0.01	0.00	101.05	101.05	0.00	0.00	101.15
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.15**	**0.01**	**0.15**	**0.01**	**0.01**	**0.01**	**0.00**	**101.05**	**101.05**	**0.00**	**0.00**	**101.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.89					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.28	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.15	33.15	0.00	0.00	33.23
Total	**3.93**	**0.28**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.52	0.00	0.15	0.01	0.15	0.01	0.01	0.01	0.00	101.05	101.05	0.00	0.00	101.15
Total	**0.05**	**0.05**	**0.52**	**0.00**	**0.15**	**0.01**	**0.15**	**0.01**	**0.01**	**0.01**	**0.00**	**101.05**	**101.05**	**0.00**	**0.00**	**101.15**

3.4 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.35
Total	**3.95**	**0.26**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.47	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	99.18	99.18	0.00	0.00	99.27

Total	**0.05**	**0.05**	**0.47**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**99.18**	**99.18**	**0.00**	**0.00**	**99.27**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.35
Total	**3.95**	**0.26**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.05	0.47	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	99.18	99.18	0.00	0.00	99.27
Total	**0.05**	**0.05**	**0.47**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**99.18**	**99.18**	**0.00**	**0.00**	**99.27**

3.4 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.34
Total	**3.94**	**0.24**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.34**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.43	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	97.14	97.14	0.00	0.00	97.22
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**97.14**	**97.14**	**0.00**	**0.00**	**97.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.91					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.24	0.00		0.02	0.02		0.02	0.02	0.00	33.28	33.28	0.00	0.00	33.34
Total	**3.94**	**0.24**	**0.24**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.34**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.43	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	97.14	97.14	0.00	0.00	97.22
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**97.14**	**97.14**	**0.00**	**0.00**	**97.22**

3.4 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.46
Total	**3.95**	**0.22**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.46**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.40	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	95.66	95.66	0.00	0.00	95.74
Total	**0.04**	**0.04**	**0.40**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**95.66**	**95.66**	**0.00**	**0.00**	**95.74**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.46
Total	**3.95**	**0.22**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.46**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.40	0.00	0.15	0.01	0.15	0.00	0.00	0.01	0.00	95.66	95.66	0.00	0.00	95.74
Total	**0.04**	**0.04**	**0.40**	**0.00**	**0.15**	**0.01**	**0.15**	**0.00**	**0.00**	**0.01**	**0.00**	**95.66**	**95.66**	**0.00**	**0.00**	**95.74**

3.5 Trenching - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.36	2.24	1.91	0.00		0.13	0.13		0.13	0.13	0.00	353.02	353.02	0.03	0.00	353.64

Total	**0.36**	**2.24**	**1.91**	**0.00**		**0.13**	**0.13**		**0.13**	**0.13**	**0.00**	**353.02**	**353.02**	**0.03**	**0.00**	**353.64**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.36	2.24	1.91	0.00		0.13	0.13		0.13	0.13	0.00	353.02	353.02	0.03	0.00	353.64
Total	**0.36**	**2.24**	**1.91**	**0.00**		**0.13**	**0.13**		**0.13**	**0.13**	**0.00**	**353.02**	**353.02**	**0.03**	**0.00**	**353.64**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.71	4.36	3.34	0.01		0.36	0.36		0.36	0.36	0.00	436.61	436.61	0.06	0.00	437.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.71**	**4.36**	**3.34**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**436.61**	**436.61**	**0.06**	**0.00**	**437.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	19.83	19.83	0.00	0.00	19.85
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**19.83**	**19.83**	**0.00**	**0.00**	**19.85**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.71	4.36	3.34	0.01		0.36	0.36		0.36	0.36	0.00	436.61	436.61	0.06	0.00	437.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.71**	**4.36**	**3.34**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**436.61**	**436.61**	**0.06**	**0.00**	**437.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	19.83	19.83	0.00	0.00	19.85
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**19.83**	**19.83**	**0.00**	**0.00**	**19.85**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 3 Construction 2021-2024

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	308.92	1000sqft
Apartments Low Rise	81	Dwelling Unit
Single Family Housing	1084	Dwelling Unit
Strip Mall	134.41	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading -

Vehicle Trips - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	10.05	26.92	31.70	0.08	2.15	1.30	3.44	0.10	1.29	1.39	0.00	6,746.44	6,746.44	0.36	0.00	6,753.96
2022	7.58	11.78	17.36	0.04	1.29	0.49	1.78	0.02	0.48	0.50	0.00	3,853.22	3,853.22	0.16	0.00	3,856.60
2023	7.47	10.76	17.12	0.04	1.29	0.42	1.72	0.02	0.42	0.44	0.00	3,843.14	3,843.14	0.15	0.00	3,846.34
2024	7.42	9.96	17.04	0.04	1.30	0.38	1.68	0.02	0.37	0.39	0.00	3,863.61	3,863.61	0.15	0.00	3,866.67
Total	**32.52**	**59.42**	**83.22**	**0.20**	**6.03**	**2.59**	**8.62**	**0.16**	**2.56**	**2.72**	**0.00**	**18,306.41**	**18,306.41**	**0.82**	**0.00**	**18,323.57**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	10.05	26.92	31.70	0.08	1.69	1.30	2.98	0.06	1.29	1.34	0.00	6,746.44	6,746.44	0.36	0.00	6,753.96

2022	7.58	11.78	17.36	0.04	1.29	0.49	1.78	0.02	0.48	0.50	0.00	3,853.22	3,853.22	0.16	0.00	3,856.60
2023	7.47	10.76	17.12	0.04	1.29	0.42	1.72	0.02	0.42	0.44	0.00	3,843.14	3,843.14	0.15	0.00	3,846.34
2024	7.42	9.96	17.04	0.04	1.30	0.38	1.68	0.02	0.37	0.39	0.00	3,863.61	3,863.61	0.15	0.00	3,866.67
Total	**32.52**	**59.42**	**83.22**	**0.20**	**5.57**	**2.59**	**8.16**	**0.12**	**2.56**	**2.67**	**0.00**	**18,306.41**	**18,306.41**	**0.82**	**0.00**	**18,323.57**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.75	0.00	0.75	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.60	9.82	9.56	0.02		0.44	0.44		0.44	0.44	0.00	2,196.09	2,196.09	0.13	0.00	2,198.79
Total	**1.60**	**9.82**	**9.56**	**0.02**	**0.75**	**0.44**	**1.19**	**0.08**	**0.44**	**0.52**	**0.00**	**2,196.09**	**2,196.09**	**0.13**	**0.00**	**2,198.79**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.15	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	36.90	36.90	0.00	0.00	36.93
Total	**0.02**	**0.01**	**0.15**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**36.90**	**36.90**	**0.00**	**0.00**	**36.93**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.29	0.00	0.29	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	1.60	9.82	9.56	0.02		0.44	0.44		0.44	0.44	0.00	2,196.09	2,196.09	0.13	0.00	2,198.79
Total	**1.60**	**9.82**	**9.56**	**0.02**	**0.29**	**0.44**	**0.73**	**0.03**	**0.44**	**0.47**	**0.00**	**2,196.09**	**2,196.09**	**0.13**	**0.00**	**2,198.79**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.15	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	36.90	36.90	0.00	0.00	36.93
Total	**0.02**	**0.01**	**0.15**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**36.90**	**36.90**	**0.00**	**0.00**	**36.93**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.69	10.12	13.31	0.03		0.45	0.45		0.45	0.45	0.00	2,523.45	2,523.45	0.14	0.00	2,526.30
Total	**1.69**	**10.12**	**13.31**	**0.03**		**0.45**	**0.45**		**0.45**	**0.45**	**0.00**	**2,523.45**	**2,523.45**	**0.14**	**0.00**	**2,526.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.21	2.40	1.46	0.01	0.21	0.07	0.28	0.01	0.06	0.07	0.00	644.81	644.81	0.01	0.00	645.00
Worker	0.24	0.22	2.25	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	564.74	564.74	0.02	0.00	565.19
Total	**0.45**	**2.62**	**3.71**	**0.02**	**1.11**	**0.10**	**1.21**	**0.02**	**0.09**	**0.11**	**0.00**	**1,209.55**	**1,209.55**	**0.03**	**0.00**	**1,210.19**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.69	10.12	13.31	0.03		0.45	0.45		0.45	0.45	0.00	2,523.45	2,523.45	0.14	0.00	2,526.30
Total	**1.69**	**10.12**	**13.31**	**0.03**		**0.45**	**0.45**		**0.45**	**0.45**	**0.00**	**2,523.45**	**2,523.45**	**0.14**	**0.00**	**2,526.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.21	2.40	1.46	0.01	0.21	0.07	0.28	0.01	0.06	0.07	0.00	644.81	644.81	0.01	0.00	645.00
Worker	0.24	0.22	2.25	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	564.74	564.74	0.02	0.00	565.19
Total	**0.45**	**2.62**	**3.71**	**0.02**	**1.11**	**0.10**	**1.21**	**0.02**	**0.09**	**0.11**	**0.00**	**1,209.55**	**1,209.55**	**0.03**	**0.00**	**1,210.19**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.58	9.09	13.22	0.03		0.38	0.38		0.38	0.38	0.00	2,513.78	2,513.78	0.13	0.00	2,516.44
Total	**1.58**	**9.09**	**13.22**	**0.03**		**0.38**	**0.38**		**0.38**	**0.38**	**0.00**	**2,513.78**	**2,513.78**	**0.13**	**0.00**	**2,516.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.26	1.40	0.01	0.21	0.06	0.28	0.01	0.06	0.07	0.00	642.03	642.03	0.01	0.00	642.21
Worker	0.22	0.20	2.09	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	553.54	553.54	0.02	0.00	553.96
Total	**0.42**	**2.46**	**3.49**	**0.02**	**1.11**	**0.09**	**1.21**	**0.02**	**0.09**	**0.11**	**0.00**	**1,195.57**	**1,195.57**	**0.03**	**0.00**	**1,196.17**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.58	9.09	13.22	0.03		0.38	0.38		0.38	0.38	0.00	2,513.78	2,513.78	0.13	0.00	2,516.44
Total	**1.58**	**9.09**	**13.22**	**0.03**		**0.38**	**0.38**		**0.38**	**0.38**	**0.00**	**2,513.78**	**2,513.78**	**0.13**	**0.00**	**2,516.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.20	2.26	1.40	0.01	0.21	0.06	0.28	0.01	0.06	0.07	0.00	642.03	642.03	0.01	0.00	642.21

Worker	0.22	0.20	2.09	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	553.54	553.54	0.02	0.00	553.96
Total	**0.42**	**2.46**	**3.49**	**0.02**	**1.11**	**0.09**	**1.21**	**0.02**	**0.09**	**0.11**	**0.00**	**1,195.57**	**1,195.57**	**0.03**	**0.00**	**1,196.17**

3.3 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.48	8.21	13.19	0.03		0.32	0.32		0.32	0.32	0.00	2,513.78	2,513.78	0.12	0.00	2,516.30
Total	**1.48**	**8.21**	**13.19**	**0.03**		**0.32**	**0.32**		**0.32**	**0.32**	**0.00**	**2,513.78**	**2,513.78**	**0.12**	**0.00**	**2,516.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.19	2.16	1.36	0.01	0.21	0.06	0.27	0.01	0.06	0.06	0.00	641.78	641.78	0.01	0.00	641.95
Worker	0.21	0.19	1.95	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	545.35	545.35	0.02	0.00	545.75
Total	**0.40**	**2.35**	**3.31**	**0.02**	**1.11**	**0.09**	**1.20**	**0.02**	**0.09**	**0.10**	**0.00**	**1,187.13**	**1,187.13**	**0.03**	**0.00**	**1,187.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	1.48	8.21	13.19	0.03		0.32	0.32		0.32	0.32	0.00	2,513.78	2,513.78	0.12	0.00	2,516.30
Total	**1.48**	**8.21**	**13.19**	**0.03**		**0.32**	**0.32**		**0.32**	**0.32**	**0.00**	**2,513.78**	**2,513.78**	**0.12**	**0.00**	**2,516.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.19	2.16	1.36	0.01	0.21	0.06	0.27	0.01	0.06	0.06	0.00	641.78	641.78	0.01	0.00	641.95
Worker	0.21	0.19	1.95	0.01	0.90	0.03	0.93	0.01	0.03	0.04	0.00	545.35	545.35	0.02	0.00	545.75
Total	**0.40**	**2.35**	**3.31**	**0.02**	**1.11**	**0.09**	**1.20**	**0.02**	**0.09**	**0.10**	**0.00**	**1,187.13**	**1,187.13**	**0.03**	**0.00**	**1,187.70**

3.3 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.41	7.50	13.27	0.03		0.28	0.28		0.28	0.28	0.00	2,533.12	2,533.12	0.11	0.00	2,535.52
Total	**1.41**	**7.50**	**13.27**	**0.03**		**0.28**	**0.28**		**0.28**	**0.28**	**0.00**	**2,533.12**	**2,533.12**	**0.11**	**0.00**	**2,535.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.09	1.33	0.01	0.21	0.06	0.27	0.01	0.05	0.06	0.00	646.51	646.51	0.01	0.00	646.67
Worker	0.20	0.18	1.84	0.01	0.91	0.03	0.94	0.01	0.03	0.04	0.00	542.15	542.15	0.02	0.00	542.52
Total	**0.38**	**2.27**	**3.17**	**0.02**	**1.12**	**0.09**	**1.21**	**0.02**	**0.08**	**0.10**	**0.00**	**1,188.66**	**1,188.66**	**0.03**	**0.00**	**1,189.19**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.41	7.50	13.27	0.03		0.28	0.28		0.28	0.28	0.00	2,533.12	2,533.12	0.11	0.00	2,535.52
Total	**1.41**	**7.50**	**13.27**	**0.03**		**0.28**	**0.28**		**0.28**	**0.28**	**0.00**	**2,533.12**	**2,533.12**	**0.11**	**0.00**	**2,535.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.18	2.09	1.33	0.01	0.21	0.06	0.27	0.01	0.05	0.06	0.00	646.51	646.51	0.01	0.00	646.67
Worker	0.20	0.18	1.84	0.01	0.91	0.03	0.94	0.01	0.03	0.04	0.00	542.15	542.15	0.02	0.00	542.52
Total	**0.38**	**2.27**	**3.17**	**0.02**	**1.12**	**0.09**	**1.21**	**0.02**	**0.08**	**0.10**	**0.00**	**1,188.66**	**1,188.66**	**0.03**	**0.00**	**1,189.19**

3.4 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.54					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**5.57**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.45	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	112.95	112.95	0.00	0.00	113.04
Total	**0.05**	**0.04**	**0.45**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**112.95**	**112.95**	**0.00**	**0.00**	**113.04**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.54					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**5.57**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.45	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	112.95	112.95	0.00	0.00	113.04
Total	**0.05**	**0.04**	**0.45**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**112.95**	**112.95**	**0.00**	**0.00**	**113.04**

3.4 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**5.55**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.04	0.04	0.42	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	110.71	110.71	0.00	0.00	110.79
Total	**0.04**	**0.04**	**0.42**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**110.71**	**110.71**	**0.00**	**0.00**	**110.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**5.55**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.42	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	110.71	110.71	0.00	0.00	110.79
Total	**0.04**	**0.04**	**0.42**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**110.71**	**110.71**	**0.00**	**0.00**	**110.79**

3.4 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	5.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**5.54**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.39	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	109.07	109.07	0.00	0.00	109.15
Total	**0.04**	**0.04**	**0.39**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**109.07**	**109.07**	**0.00**	**0.00**	**109.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**5.54**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.39	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	109.07	109.07	0.00	0.00	109.15
Total	**0.04**	**0.04**	**0.39**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**109.07**	**109.07**	**0.00**	**0.00**	**109.15**

3.4 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.56					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**5.58**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.37	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	108.43	108.43	0.00	0.00	108.50
Total	**0.04**	**0.04**	**0.37**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**108.43**	**108.43**	**0.00**	**0.00**	**108.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.56					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**5.58**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.04	0.04	0.37	0.00	0.18	0.01	0.19	0.00	0.01	0.01	0.00	108.43	108.43	0.00	0.00	108.50
Total	**0.04**	**0.04**	**0.37**	**0.00**	**0.18**	**0.01**	**0.19**	**0.00**	**0.01**	**0.01**	**0.00**	**108.43**	**108.43**	**0.00**	**0.00**	**108.50**

3.5 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.80	0.98	0.00		0.04	0.04		0.04	0.04	0.00	181.58	181.58	0.01	0.00	181.83

Total	**0.15**	**0.80**	**0.98**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**181.58**	**181.58**	**0.01**	**0.00**	**181.83**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.77	4.77	0.00	0.00	4.77
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.77**	**4.77**	**0.00**	**0.00**	**4.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.80	0.98	0.00		0.04	0.04		0.04	0.04	0.00	181.58	181.58	0.01	0.00	181.83
Total	**0.15**	**0.80**	**0.98**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**181.58**	**181.58**	**0.01**	**0.00**	**181.83**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.77	4.77	0.00	0.00	4.77
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.77**	**4.77**	**0.00**	**0.00**	**4.77**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.53	3.29	3.21	0.01		0.24	0.24		0.24	0.24	0.00	429.99	429.99	0.04	0.00	430.90
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.53**	**3.29**	**3.21**	**0.01**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**429.99**	**429.99**	**0.04**	**0.00**	**430.90**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.88	17.88	0.00	0.00	17.89
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.88**	**17.88**	**0.00**	**0.00**	**17.89**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.53	3.29	3.21	0.01		0.24	0.24		0.24	0.24	0.00	429.99	429.99	0.04	0.00	430.90
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.53**	**3.29**	**3.21**	**0.01**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**429.99**	**429.99**	**0.04**	**0.00**	**430.90**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.88	17.88	0.00	0.00	17.89
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.88**	**17.88**	**0.00**	**0.00**	**17.89**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 4 Construction 2025-2028

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	308.92	1000sqft
Hotel	750	Room
Apartments Low Rise	173	Dwelling Unit
Single Family Housing	1786	Dwelling Unit
Strip Mall	136.52	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Grading - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	18.24	44.75	71.47	0.18	4.34	1.85	6.19	0.23	1.84	2.07	0.00	16,140.87	16,140.87	0.70	0.00	16,155.48
2026	13.91	22.02	40.13	0.11	2.41	0.79	3.20	0.04	0.78	0.82	0.00	9,326.78	9,326.78	0.34	0.00	9,334.01
2027	13.91	22.02	40.13	0.11	2.41	0.79	3.20	0.04	0.78	0.82	0.00	9,326.78	9,326.78	0.34	0.00	9,334.01
2028	13.86	21.94	39.98	0.11	2.40	0.79	3.18	0.04	0.78	0.82	0.00	9,291.05	9,291.05	0.34	0.00	9,298.25
Total	**59.92**	**110.73**	**191.71**	**0.51**	**11.56**	**4.22**	**15.77**	**0.35**	**4.18**	**4.53**	**0.00**	**44,085.48**	**44,085.48**	**1.72**	**0.00**	**44,121.75**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	18.24	44.75	71.47	0.18	3.29	1.85	5.14	0.12	1.84	1.95	0.00	16,140.87	16,140.87	0.70	0.00	16,155.48

2026	13.91	22.02	40.13	0.11	2.41	0.79	3.20	0.04	0.78	0.82	0.00	9,326.78	9,326.78	0.34	0.00	9,334.01
2027	13.91	22.02	40.13	0.11	2.41	0.79	3.20	0.04	0.78	0.82	0.00	9,326.78	9,326.78	0.34	0.00	9,334.01
2028	13.86	21.94	39.98	0.11	2.40	0.79	3.18	0.04	0.78	0.82	0.00	9,291.05	9,291.05	0.34	0.00	9,298.25
Total	**59.92**	**110.73**	**191.71**	**0.51**	**10.51**	**4.22**	**14.72**	**0.24**	**4.18**	**4.41**	**0.00**	**44,085.48**	**44,085.48**	**1.72**	**0.00**	**44,121.75**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					1.71	0.00	1.71	0.18	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	3.12	15.73	21.68	0.06		0.64	0.64		0.64	0.64	0.00	5,326.82	5,326.82	0.25	0.00	5,332.12
Total	**3.12**	**15.73**	**21.68**	**0.06**	**1.71**	**0.64**	**2.35**	**0.18**	**0.64**	**0.82**	**0.00**	**5,326.82**	**5,326.82**	**0.25**	**0.00**	**5,332.12**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.02	0.27	0.00	0.14	0.00	0.14	0.00	0.00	0.01	0.00	81.80	81.80	0.00	0.00	81.85
Total	**0.03**	**0.02**	**0.27**	**0.00**	**0.14**	**0.00**	**0.14**	**0.00**	**0.00**	**0.01**	**0.00**	**81.80**	**81.80**	**0.00**	**0.00**	**81.85**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.67	0.00	0.67	0.07	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	3.12	15.73	21.68	0.06		0.64	0.64		0.64	0.64	0.00	5,326.82	5,326.82	0.25	0.00	5,332.12
Total	**3.12**	**15.73**	**21.68**	**0.06**	**0.67**	**0.64**	**1.31**	**0.07**	**0.64**	**0.71**	**0.00**	**5,326.82**	**5,326.82**	**0.25**	**0.00**	**5,332.12**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.02	0.27	0.00	0.14	0.00	0.14	0.00	0.00	0.01	0.00	81.80	81.80	0.00	0.00	81.85
Total	**0.03**	**0.02**	**0.27**	**0.00**	**0.14**	**0.00**	**0.14**	**0.00**	**0.00**	**0.01**	**0.00**	**81.80**	**81.80**	**0.00**	**0.00**	**81.85**

3.3 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82
Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82
Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

3.3 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82
Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82

Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

3.3 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82
Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	3.63	17.87	33.69	0.08		0.62	0.62		0.62	0.62	0.00	6,937.16	6,937.16	0.29	0.00	6,943.25
Total	**3.63**	**17.87**	**33.69**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,937.16**	**6,937.16**	**0.29**	**0.00**	**6,943.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.32	3.64	2.33	0.01	0.39	0.10	0.49	0.01	0.09	0.10	0.00	1,163.53	1,163.53	0.01	0.00	1,163.82
Worker	0.36	0.30	3.23	0.01	1.68	0.06	1.74	0.03	0.05	0.08	0.00	993.86	993.86	0.03	0.00	994.53
Total	**0.68**	**3.94**	**5.56**	**0.02**	**2.07**	**0.16**	**2.23**	**0.04**	**0.14**	**0.18**	**0.00**	**2,157.39**	**2,157.39**	**0.04**	**0.00**	**2,158.35**

3.3 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.62	17.81	33.56	0.08		0.62	0.62		0.62	0.62	0.00	6,910.58	6,910.58	0.29	0.00	6,916.65
Total	**3.62**	**17.81**	**33.56**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,910.58**	**6,910.58**	**0.29**	**0.00**	**6,916.65**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.31	3.62	2.32	0.01	0.38	0.10	0.48	0.01	0.09	0.10	0.00	1,159.08	1,159.08	0.01	0.00	1,159.36
Worker	0.36	0.30	3.22	0.01	1.68	0.06	1.73	0.03	0.05	0.08	0.00	990.05	990.05	0.03	0.00	990.72
Total	**0.67**	**3.92**	**5.54**	**0.02**	**2.06**	**0.16**	**2.21**	**0.04**	**0.14**	**0.18**	**0.00**	**2,149.13**	**2,149.13**	**0.04**	**0.00**	**2,150.08**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.62	17.81	33.56	0.08		0.62	0.62		0.62	0.62	0.00	6,910.58	6,910.58	0.29	0.00	6,916.65
Total	**3.62**	**17.81**	**33.56**	**0.08**		**0.62**	**0.62**		**0.62**	**0.62**	**0.00**	**6,910.58**	**6,910.58**	**0.29**	**0.00**	**6,916.65**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.31	3.62	2.32	0.01	0.38	0.10	0.48	0.01	0.09	0.10	0.00	1,159.08	1,159.08	0.01	0.00	1,159.36
Worker	0.36	0.30	3.22	0.01	1.68	0.06	1.73	0.03	0.05	0.08	0.00	990.05	990.05	0.03	0.00	990.72
Total	**0.67**	**3.92**	**5.54**	**0.02**	**2.06**	**0.16**	**2.21**	**0.04**	**0.14**	**0.18**	**0.00**	**2,149.13**	**2,149.13**	**0.04**	**0.00**	**2,150.08**

3.4 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

3.4 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

3.4 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.51					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**9.53**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.65	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.95	198.95	0.01	0.00	199.09
Total	**0.07**	**0.06**	**0.65**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.95**	**198.95**	**0.01**	**0.00**	**199.09**

3.4 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.47					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**9.49**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.64	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.19	198.19	0.01	0.00	198.32
Total	**0.07**	**0.06**	**0.64**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.19**	**198.19**	**0.01**	**0.00**	**198.32**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.47					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**9.49**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.07	0.06	0.64	0.00	0.34	0.01	0.35	0.01	0.01	0.02	0.00	198.19	198.19	0.01	0.00	198.32
Total	**0.07**	**0.06**	**0.64**	**0.00**	**0.34**	**0.01**	**0.35**	**0.01**	**0.01**	**0.02**	**0.00**	**198.19**	**198.19**	**0.01**	**0.00**	**198.32**

3.5 Trenching - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40

Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40
Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.94	5.90	7.37	0.01		0.36	0.36		0.36	0.36	0.00	1,004.20	1,004.20	0.08	0.00	1,005.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.94**	**5.90**	**7.37**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**1,004.20**	**1,004.20**	**0.08**	**0.00**	**1,005.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.13	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	39.56	39.56	0.00	0.00	39.59
Total	**0.01**	**0.01**	**0.13**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**39.56**	**39.56**	**0.00**	**0.00**	**39.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.94	5.90	7.37	0.01		0.36	0.36		0.36	0.36	0.00	1,004.20	1,004.20	0.08	0.00	1,005.82
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.94**	**5.90**	**7.37**	**0.01**		**0.36**	**0.36**		**0.36**	**0.36**	**0.00**	**1,004.20**	**1,004.20**	**0.08**	**0.00**	**1,005.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.13	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	39.56	39.56	0.00	0.00	39.59
Total	**0.01**	**0.01**	**0.13**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**39.56**	**39.56**	**0.00**	**0.00**	**39.59**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 5 Construction 2029-2032

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	308.921	1000sqft
Apartments Low Rise	174	Dwelling Unit
Single Family Housing	1800	Dwelling Unit
Strip Mall	77.23	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2029	15.07	32.70	52.39	0.13	3.35	1.36	4.71	0.17	1.35	1.52	0.00	11,871.95	11,871.95	0.51	0.00	11,882.66
2030	11.40	11.76	28.34	0.08	1.94	0.34	2.29	0.03	0.33	0.37	0.00	6,847.46	6,847.46	0.21	0.00	6,851.97
2031	11.40	11.76	28.34	0.08	1.94	0.34	2.29	0.03	0.33	0.37	0.00	6,847.46	6,847.46	0.21	0.00	6,851.97
2032	11.44	11.81	28.45	0.08	1.95	0.34	2.30	0.03	0.33	0.37	0.00	6,873.70	6,873.70	0.22	0.00	6,878.22
Total	**49.31**	**68.03**	**137.52**	**0.37**	**9.18**	**2.38**	**11.59**	**0.26**	**2.34**	**2.63**	**0.00**	**32,440.57**	**32,440.57**	**1.15**	**0.00**	**32,464.82**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2029	15.07	32.70	52.39	0.13	2.59	1.36	3.95	0.09	1.35	1.44	0.00	11,871.95	11,871.95	0.51	0.00	11,882.66
2030	11.40	11.76	28.34	0.08	1.94	0.34	2.29	0.03	0.33	0.37	0.00	6,847.46	6,847.46	0.21	0.00	6,851.97

2031	11.40	11.76	28.34	0.08	1.94	0.34	2.29	0.03	0.33	0.37	0.00	6,847.46	6,847.46	0.21	0.00	6,851.97
2032	11.44	11.81	28.45	0.08	1.95	0.34	2.30	0.03	0.33	0.37	0.00	6,873.70	6,873.70	0.22	0.00	6,878.22
Total	**49.31**	**68.03**	**137.52**	**0.37**	**8.42**	**2.38**	**10.83**	**0.18**	**2.34**	**2.55**	**0.00**	**32,440.57**	**32,440.57**	**1.15**	**0.00**	**32,464.82**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.24	0.00	1.24	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	2.22	11.27	15.58	0.04		0.46	0.46		0.46	0.46	0.00	3,790.61	3,790.61	0.18	0.00	3,794.40
Total	**2.22**	**11.27**	**15.58**	**0.04**	**1.24**	**0.46**	**1.70**	**0.13**	**0.46**	**0.59**	**0.00**	**3,790.61**	**3,790.61**	**0.18**	**0.00**	**3,794.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.56	58.56	0.00	0.00	58.60
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.56**	**58.56**	**0.00**	**0.00**	**58.60**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	2.22	11.27	15.58	0.04		0.46	0.46		0.46	0.46	0.00	3,790.61	3,790.61	0.18	0.00	3,794.40
Total	**2.22**	**11.27**	**15.58**	**0.04**	**0.48**	**0.46**	**0.94**	**0.05**	**0.46**	**0.51**	**0.00**	**3,790.61**	**3,790.61**	**0.18**	**0.00**	**3,794.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.19	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	58.56	58.56	0.00	0.00	58.60
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.10**	**0.00**	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**58.56**	**58.56**	**0.00**	**0.00**	**58.60**

3.3 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.80	1.80	0.01	0.30	0.08	0.37	0.01	0.07	0.08	0.00	895.53	895.53	0.01	0.00	895.75
Worker	0.30	0.25	2.64	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	811.18	811.18	0.03	0.00	811.73
Total	**0.54**	**3.05**	**4.44**	**0.02**	**1.67**	**0.13**	**1.79**	**0.03**	**0.11**	**0.14**	**0.00**	**1,706.71**	**1,706.71**	**0.04**	**0.00**	**1,707.48**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.61	12.74	24.00	0.06		0.44	0.44		0.44	0.44	0.00	4,987.69	4,987.69	0.21	0.00	4,992.07
Total	**2.61**	**12.74**	**24.00**	**0.06**		**0.44**	**0.44**		**0.44**	**0.44**	**0.00**	**4,987.69**	**4,987.69**	**0.21**	**0.00**	**4,992.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.24	2.80	1.80	0.01	0.30	0.08	0.37	0.01	0.07	0.08	0.00	895.53	895.53	0.01	0.00	895.75
Worker	0.30	0.25	2.64	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	811.18	811.18	0.03	0.00	811.73
Total	**0.54**	**3.05**	**4.44**	**0.02**	**1.67**	**0.13**	**1.79**	**0.03**	**0.11**	**0.14**	**0.00**	**1,706.71**	**1,706.71**	**0.04**	**0.00**	**1,707.48**

3.3 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.53	1.67	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	894.71	894.71	0.01	0.00	894.92
Worker	0.24	0.18	2.12	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	776.77	776.77	0.02	0.00	777.22
Total	**0.46**	**2.71**	**3.79**	**0.02**	**1.67**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,671.48**	**1,671.48**	**0.03**	**0.00**	**1,672.14**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.53	1.67	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	894.71	894.71	0.01	0.00	894.92
Worker	0.24	0.18	2.12	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	776.77	776.77	0.02	0.00	777.22

Total	**0.46**	**2.71**	**3.79**	**0.02**	**1.67**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,671.48**	**1,671.48**	**0.03**	**0.00**	**1,672.14**

3.3 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42
Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.53	1.67	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	894.71	894.71	0.01	0.00	894.92
Worker	0.24	0.18	2.12	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	776.77	776.77	0.02	0.00	777.22
Total	**0.46**	**2.71**	**3.79**	**0.02**	**1.67**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,671.48**	**1,671.48**	**0.03**	**0.00**	**1,672.14**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.20	8.90	23.89	0.06		0.22	0.22		0.22	0.22	0.00	4,987.69	4,987.69	0.18	0.00	4,991.42

Total	**2.20**	**8.90**	**23.89**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**4,987.69**	**4,987.69**	**0.18**	**0.00**	**4,991.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.53	1.67	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	894.71	894.71	0.01	0.00	894.92
Worker	0.24	0.18	2.12	0.01	1.37	0.05	1.42	0.02	0.04	0.06	0.00	776.77	776.77	0.02	0.00	777.22
Total	**0.46**	**2.71**	**3.79**	**0.02**	**1.67**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,671.48**	**1,671.48**	**0.03**	**0.00**	**1,672.14**

3.3 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.21	8.93	23.98	0.06		0.22	0.22		0.22	0.22	0.00	5,006.80	5,006.80	0.18	0.00	5,010.55
Total	**2.21**	**8.93**	**23.98**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**5,006.80**	**5,006.80**	**0.18**	**0.00**	**5,010.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.54	1.68	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	898.14	898.14	0.01	0.00	898.35
Worker	0.24	0.18	2.13	0.01	1.38	0.05	1.42	0.02	0.04	0.06	0.00	779.75	779.75	0.02	0.00	780.20
Total	**0.46**	**2.72**	**3.81**	**0.02**	**1.68**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,677.89**	**1,677.89**	**0.03**	**0.00**	**1,678.55**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.21	8.93	23.98	0.06		0.22	0.22		0.22	0.22	0.00	5,006.80	5,006.80	0.18	0.00	5,010.55
Total	**2.21**	**8.93**	**23.98**	**0.06**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**5,006.80**	**5,006.80**	**0.18**	**0.00**	**5,010.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.22	2.54	1.68	0.01	0.30	0.07	0.36	0.01	0.06	0.07	0.00	898.14	898.14	0.01	0.00	898.35
Worker	0.24	0.18	2.13	0.01	1.38	0.05	1.42	0.02	0.04	0.06	0.00	779.75	779.75	0.02	0.00	780.20
Total	**0.46**	**2.72**	**3.81**	**0.02**	**1.68**	**0.12**	**1.78**	**0.03**	**0.10**	**0.13**	**0.00**	**1,677.89**	**1,677.89**	**0.03**	**0.00**	**1,678.55**

3.4 Architectural Coating - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**8.69**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.53	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	161.88	161.88	0.01	0.00	161.98
Total	**0.06**	**0.05**	**0.53**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**161.88**	**161.88**	**0.01**	**0.00**	**161.98**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**8.69**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.05	0.53	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	161.88	161.88	0.01	0.00	161.98
Total	**0.06**	**0.05**	**0.53**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**161.88**	**161.88**	**0.01**	**0.00**	**161.98**

3.4 Architectural Coating - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**8.69**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	155.01	155.01	0.00	0.00	155.10

Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.01**	**155.01**	**0.00**	**0.00**	**155.10**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**8.69**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	155.01	155.01	0.00	0.00	155.10
Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.01**	**155.01**	**0.00**	**0.00**	**155.10**

3.4 Architectural Coating - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**8.69**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	155.01	155.01	0.00	0.00	155.10
Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.01**	**155.01**	**0.00**	**0.00**	**155.10**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.67					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**8.69**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.27	0.01	0.28	0.00	0.01	0.01	0.00	155.01	155.01	0.00	0.00	155.10
Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.27**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.01**	**155.01**	**0.00**	**0.00**	**155.10**

3.4 Architectural Coating - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.70					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**8.72**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.28	0.01	0.28	0.00	0.01	0.01	0.00	155.60	155.60	0.00	0.00	155.69
Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.28**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.60**	**155.60**	**0.00**	**0.00**	**155.69**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.70					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**8.72**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.05	0.04	0.42	0.00	0.28	0.01	0.28	0.00	0.01	0.01	0.00	155.60	155.60	0.00	0.00	155.69
Total	**0.05**	**0.04**	**0.42**	**0.00**	**0.28**	**0.01**	**0.28**	**0.00**	**0.01**	**0.01**	**0.00**	**155.60**	**155.60**	**0.00**	**0.00**	**155.69**

3.5 Trenching - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40

Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.05	1.86	0.00		0.05	0.05		0.05	0.05	0.00	353.02	353.02	0.02	0.00	353.40
Total	**0.22**	**1.05**	**1.86**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**353.02**	**353.02**	**0.02**	**0.00**	**353.40**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	8.69	8.69	0.00	0.00	8.70
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.69**	**8.69**	**0.00**	**0.00**	**8.70**

3.6 Paving - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.36	5.45	0.01		0.27	0.27		0.27	0.27	0.00	742.24	742.24	0.06	0.00	743.43
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.70**	**4.36**	**5.45**	**0.01**		**0.27**	**0.27**		**0.27**	**0.27**	**0.00**	**742.24**	**742.24**	**0.06**	**0.00**	**743.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	29.27	29.27	0.00	0.00	29.29
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**29.27**	**29.27**	**0.00**	**0.00**	**29.29**

Tehachapi Upland MSHCP

Kern County General Plan Buildout Alternative Phase 6 Construction 2033-2036

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	308.92	1000sqft
Single Family Housing	469	Dwelling Unit
Strip Mall	77.23	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2033	4.38	8.90	19.37	0.05	0.91	0.27	1.18	0.03	0.27	0.30	0.00	3,994.95	3,994.95	0.14	0.00	3,997.85
2034	3.75	5.99	13.63	0.03	0.66	0.16	0.81	0.01	0.15	0.16	0.00	2,828.58	2,828.58	0.09	0.00	2,830.41
2035	3.67	5.32	13.53	0.03	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,832.57	2,832.57	0.08	0.00	2,834.26
2036	3.69	5.34	13.58	0.03	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,843.43	2,843.43	0.08	0.00	2,845.12
Total	**15.49**	**25.55**	**60.11**	**0.14**	**2.89**	**0.65**	**3.53**	**0.06**	**0.64**	**0.70**	**0.00**	**12,499.53**	**12,499.53**	**0.39**	**0.00**	**12,507.64**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2033	4.38	8.90	19.37	0.05	0.78	0.27	1.05	0.02	0.27	0.29	0.00	3,994.95	3,994.95	0.14	0.00	3,997.85
2034	3.75	5.99	13.63	0.03	0.66	0.16	0.81	0.01	0.15	0.16	0.00	2,828.58	2,828.58	0.09	0.00	2,830.41
2035	3.67	5.32	13.53	0.03	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,832.57	2,832.57	0.08	0.00	2,834.26
2036	3.69	5.34	13.58	0.03	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,843.43	2,843.43	0.08	0.00	2,845.12

Total	**15.49**	**25.55**	**60.11**	**0.14**	**2.76**	**0.65**	**3.40**	**0.05**	**0.64**	**0.69**	**0.00**	**12,499.53**	**12,499.53**	**0.39**	**0.00**	**12,507.64**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.21	0.00	0.21	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.32	1.22	2.60	0.01		0.05	0.05		0.05	0.05	0.00	669.31	669.31	0.03	0.00	669.86
Total	**0.32**	**1.22**	**2.60**	**0.01**	**0.21**	**0.05**	**0.26**	**0.02**	**0.05**	**0.07**	**0.00**	**669.31**	**669.31**	**0.03**	**0.00**	**669.86**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.84	9.84	0.00	0.00	9.85
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.84**	**9.84**	**0.00**	**0.00**	**9.85**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.32	1.22	2.60	0.01		0.05	0.05		0.05	0.05	0.00	669.31	669.31	0.03	0.00	669.86
Total	**0.32**	**1.22**	**2.60**	**0.01**	**0.08**	**0.05**	**0.13**	**0.01**	**0.05**	**0.06**	**0.00**	**669.31**	**669.31**	**0.03**	**0.00**	**669.86**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.84	9.84	0.00	0.00	9.85
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.84**	**9.84**	**0.00**	**0.00**	**9.85**

3.3 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.91	4.77	11.89	0.02		0.11	0.11		0.11	0.11	0.00	2,125.93	2,125.93	0.07	0.00	2,127.47
Total	**0.91**	**4.77**	**11.89**	**0.02**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**2,125.93**	**2,125.93**	**0.07**	**0.00**	**2,127.47**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.04	0.69	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.57	367.57	0.00	0.00	367.66
Worker	0.08	0.06	0.69	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	251.89	251.89	0.01	0.00	252.04
Total	**0.17**	**1.10**	**1.38**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**619.46**	**619.46**	**0.01**	**0.00**	**619.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.91	4.77	11.89	0.02		0.11	0.11		0.11	0.11	0.00	2,125.93	2,125.93	0.07	0.00	2,127.47
Total	**0.91**	**4.77**	**11.89**	**0.02**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**2,125.93**	**2,125.93**	**0.07**	**0.00**	**2,127.47**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.04	0.69	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.57	367.57	0.00	0.00	367.66
Worker	0.08	0.06	0.69	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	251.89	251.89	0.01	0.00	252.04
Total	**0.17**	**1.10**	**1.38**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**619.46**	**619.46**	**0.01**	**0.00**	**619.70**

3.3 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.91	4.77	11.89	0.02		0.11	0.11		0.11	0.11	0.00	2,125.93	2,125.93	0.07	0.00	2,127.47
Total	**0.91**	**4.77**	**11.89**	**0.02**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**2,125.93**	**2,125.93**	**0.07**	**0.00**	**2,127.47**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.04	0.69	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.57	367.57	0.00	0.00	367.66
Worker	0.08	0.06	0.69	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	251.89	251.89	0.01	0.00	252.04
Total	**0.17**	**1.10**	**1.38**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**619.46**	**619.46**	**0.01**	**0.00**	**619.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.91	4.77	11.89	0.02		0.11	0.11		0.11	0.11	0.00	2,125.93	2,125.93	0.07	0.00	2,127.47
Total	**0.91**	**4.77**	**11.89**	**0.02**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**2,125.93**	**2,125.93**	**0.07**	**0.00**	**2,127.47**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.04	0.69	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.57	367.57	0.00	0.00	367.66
Worker	0.08	0.06	0.69	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	251.89	251.89	0.01	0.00	252.04
Total	**0.17**	**1.10**	**1.38**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**619.46**	**619.46**	**0.01**	**0.00**	**619.70**

3.3 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.84	4.16	11.91	0.02		0.06	0.06		0.06	0.06	0.00	2,134.11	2,134.11	0.07	0.00	2,135.53
Total	**0.84**	**4.16**	**11.91**	**0.02**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**2,134.11**	**2,134.11**	**0.07**	**0.00**	**2,135.53**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.84	4.16	11.91	0.02		0.06	0.06		0.06	0.06	0.00	2,134.11	2,134.11	0.07	0.00	2,135.53
Total	**0.84**	**4.16**	**11.91**	**0.02**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**2,134.11**	**2,134.11**	**0.07**	**0.00**	**2,135.53**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

3.3 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.84	4.18	11.96	0.02		0.07	0.07		0.07	0.07	0.00	2,142.28	2,142.28	0.07	0.00	2,143.71
Total	**0.84**	**4.18**	**11.96**	**0.02**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,142.28**	**2,142.28**	**0.07**	**0.00**	**2,143.71**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.01	0.68	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	370.22	370.22	0.00	0.00	370.30

Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	248.21	248.21	0.01	0.00	248.34
Total	**0.16**	**1.06**	**1.28**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**618.43**	**618.43**	**0.01**	**0.00**	**618.64**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.84	4.18	11.96	0.02		0.07	0.07		0.07	0.07	0.00	2,142.28	2,142.28	0.07	0.00	2,143.71
Total	**0.84**	**4.18**	**11.96**	**0.02**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,142.28**	**2,142.28**	**0.07**	**0.00**	**2,143.71**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.01	0.68	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	370.22	370.22	0.00	0.00	370.30
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	248.21	248.21	0.01	0.00	248.34
Total	**0.16**	**1.06**	**1.28**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**618.43**	**618.43**	**0.01**	**0.00**	**618.64**

3.4 Architectural Coating - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.14	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	50.03	50.03	0.00	0.00	50.06
Total	**0.02**	**0.01**	**0.14**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**	**50.03**	**0.00**	**0.00**	**50.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.14	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	50.03	50.03	0.00	0.00	50.06
Total	**0.02**	**0.01**	**0.14**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**	**50.03**	**0.00**	**0.00**	**50.06**

3.4 Architectural Coating - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.14	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	50.03	50.03	0.00	0.00	50.06
Total	**0.02**	**0.01**	**0.14**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**	**50.03**	**0.00**	**0.00**	**50.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.14	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	50.03	50.03	0.00	0.00	50.06
Total	**0.02**	**0.01**	**0.14**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**	**50.03**	**0.00**	**0.00**	**50.06**

3.4 Architectural Coating - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

3.4 Architectural Coating - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.66					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**2.68**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.30	49.30	0.00	0.00	49.33
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.30**	**49.30**	**0.00**	**0.00**	**49.33**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.66					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**2.68**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.30	49.30	0.00	0.00	49.33
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.30**	**49.30**	**0.00**	**0.00**	**49.33**

3.5 Trenching - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.33	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.23
Total	**0.08**	**0.33**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.88	3.88	0.00	0.00	3.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.88**	**3.88**	**0.00**	**0.00**	**3.88**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.33	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.23
Total	**0.08**	**0.33**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.88	3.88	0.00	0.00	3.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.88**	**3.88**	**0.00**	**0.00**	**3.88**

3.6 Paving - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.22	1.35	2.22	0.00		0.06	0.06		0.06	0.06	0.00	305.63	305.63	0.02	0.00	306.00
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.22**	**1.35**	**2.22**	**0.00**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**305.63**	**305.63**	**0.02**	**0.00**	**306.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	11.61	11.61	0.00	0.00	11.61
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.61**	**11.61**	**0.00**	**0.00**	**11.61**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.22	1.35	2.22	0.00		0.06	0.06		0.06	0.06	0.00	305.63	305.63	0.02	0.00	306.00
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.22**	**1.35**	**2.22**	**0.00**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**305.63**	**305.63**	**0.02**	**0.00**	**306.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	11.61	11.61	0.00	0.00	11.61
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.61**	**11.61**	**0.00**	**0.00**	**11.61**

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 7 Construction 2037-2040

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	308.92	1000sqft
Single Family Housing	469	Dwelling Unit
Strip Mall	77.23	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2037	4.64	9.00	23.47	0.06	1.20	0.22	1.42	0.06	0.22	0.28	0.00	4,945.75	4,945.75	0.16	0.00	4,949.06
2038	3.74	5.68	14.66	0.04	0.66	0.11	0.77	0.01	0.11	0.12	0.00	3,002.00	3,002.00	0.09	0.00	3,003.80
2039	3.72	5.66	14.60	0.04	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,990.50	2,990.50	0.09	0.00	2,992.29
2040	3.45	4.09	10.99	0.03	0.51	0.08	0.59	0.01	0.07	0.08	0.00	2,260.81	2,260.81	0.06	0.00	2,262.11
Total	**15.55**	**24.43**	**63.72**	**0.17**	**3.03**	**0.52**	**3.55**	**0.09**	**0.51**	**0.60**	**0.00**	**13,199.06**	**13,199.06**	**0.40**	**0.00**	**13,207.26**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2037	4.64	9.00	23.47	0.06	0.91	0.22	1.13	0.03	0.22	0.25	0.00	4,945.75	4,945.75	0.16	0.00	4,949.06
2038	3.74	5.68	14.66	0.04	0.66	0.11	0.77	0.01	0.11	0.12	0.00	3,002.00	3,002.00	0.09	0.00	3,003.80
2039	3.72	5.66	14.60	0.04	0.66	0.11	0.77	0.01	0.11	0.12	0.00	2,990.50	2,990.50	0.09	0.00	2,992.29

2040	3.45	4.09	10.99	0.03	0.51	0.08	0.59	0.01	0.07	0.08	0.00	2,260.81	2,260.81	0.06	0.00	2,262.11
Total	**15.55**	**24.43**	**63.72**	**0.17**	**2.74**	**0.52**	**3.26**	**0.06**	**0.51**	**0.57**	**0.00**	**13,199.06**	**13,199.06**	**0.40**	**0.00**	**13,207.26**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.48	0.00	0.48	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.63	1.95	5.69	0.02		0.06	0.06		0.06	0.06	0.00	1,438.15	1,438.15	0.05	0.00	1,439.20

Total	**0.63**	**1.95**	**5.69**	**0.02**	**0.48**	**0.06**	**0.54**	**0.05**	**0.06**	**0.11**	**0.00**	**1,438.15**	**1,438.15**	**0.05**	**0.00**	**1,439.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.93	20.93	0.00	0.00	20.94
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.93**	**20.93**	**0.00**	**0.00**	**20.94**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.19	0.00	0.19	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.63	1.95	5.69	0.02		0.06	0.06		0.06	0.06	0.00	1,438.15	1,438.15	0.05	0.00	1,439.20
Total	**0.63**	**1.95**	**5.69**	**0.02**	**0.19**	**0.06**	**0.25**	**0.02**	**0.06**	**0.08**	**0.00**	**1,438.15**	**1,438.15**	**0.05**	**0.00**	**1,439.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	20.93	20.93	0.00	0.00	20.94
Total	**0.01**	**0.00**	**0.05**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**20.93**	**20.93**	**0.00**	**0.00**	**20.94**

3.3 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.53	13.03	0.03		0.07	0.07		0.07	0.07	0.00	2,303.53	2,303.53	0.07	0.00	2,305.07
Total	**0.90**	**4.53**	**13.03**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,303.53**	**2,303.53**	**0.07**	**0.00**	**2,305.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.53	13.03	0.03		0.07	0.07		0.07	0.07	0.00	2,303.53	2,303.53	0.07	0.00	2,305.07
Total	**0.90**	**4.53**	**13.03**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,303.53**	**2,303.53**	**0.07**	**0.00**	**2,305.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

3.3 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.53	13.03	0.03		0.07	0.07		0.07	0.07	0.00	2,303.53	2,303.53	0.07	0.00	2,305.07
Total	**0.90**	**4.53**	**13.03**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,303.53**	**2,303.53**	**0.07**	**0.00**	**2,305.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.53	13.03	0.03		0.07	0.07		0.07	0.07	0.00	2,303.53	2,303.53	0.07	0.00	2,305.07
Total	**0.90**	**4.53**	**13.03**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,303.53**	**2,303.53**	**0.07**	**0.00**	**2,305.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	368.81	368.81	0.00	0.00	368.89
Worker	0.07	0.05	0.60	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	247.27	247.27	0.01	0.00	247.40
Total	**0.16**	**1.05**	**1.27**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**616.08**	**616.08**	**0.01**	**0.00**	**616.29**

3.3 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.51	12.98	0.03		0.07	0.07		0.07	0.07	0.00	2,294.71	2,294.71	0.07	0.00	2,296.23
Total	**0.90**	**4.51**	**12.98**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,294.71**	**2,294.71**	**0.07**	**0.00**	**2,296.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.39	367.39	0.00	0.00	367.48
Worker	0.07	0.05	0.59	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	246.32	246.32	0.01	0.00	246.45
Total	**0.16**	**1.05**	**1.26**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**613.71**	**613.71**	**0.01**	**0.00**	**613.93**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.90	4.51	12.98	0.03		0.07	0.07		0.07	0.07	0.00	2,294.71	2,294.71	0.07	0.00	2,296.23
Total	**0.90**	**4.51**	**12.98**	**0.03**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**2,294.71**	**2,294.71**	**0.07**	**0.00**	**2,296.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.00	0.67	0.00	0.12	0.03	0.15	0.00	0.02	0.03	0.00	367.39	367.39	0.00	0.00	367.48
Worker	0.07	0.05	0.59	0.00	0.45	0.02	0.46	0.01	0.01	0.02	0.00	246.32	246.32	0.01	0.00	246.45
Total	**0.16**	**1.05**	**1.26**	**0.00**	**0.57**	**0.05**	**0.61**	**0.01**	**0.03**	**0.05**	**0.00**	**613.71**	**613.71**	**0.01**	**0.00**	**613.93**

3.3 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.66	3.22	9.74	0.02		0.04	0.04		0.04	0.04	0.00	1,721.03	1,721.03	0.05	0.00	1,722.14
Total	**0.66**	**3.22**	**9.74**	**0.02**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**1,721.03**	**1,721.03**	**0.05**	**0.00**	**1,722.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.06	0.74	0.50	0.00	0.09	0.02	0.11	0.00	0.02	0.02	0.00	275.47	275.47	0.00	0.00	275.53
Worker	0.04	0.03	0.41	0.00	0.33	0.01	0.35	0.01	0.01	0.02	0.00	182.50	182.50	0.00	0.00	182.59
Total	**0.10**	**0.77**	**0.91**	**0.00**	**0.42**	**0.03**	**0.46**	**0.01**	**0.03**	**0.04**	**0.00**	**457.97**	**457.97**	**0.00**	**0.00**	**458.12**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.66	3.22	9.74	0.02		0.04	0.04		0.04	0.04	0.00	1,721.03	1,721.03	0.05	0.00	1,722.14
Total	**0.66**	**3.22**	**9.74**	**0.02**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**1,721.03**	**1,721.03**	**0.05**	**0.00**	**1,722.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.74	0.50	0.00	0.09	0.02	0.11	0.00	0.02	0.02	0.00	275.47	275.47	0.00	0.00	275.53
Worker	0.04	0.03	0.41	0.00	0.33	0.01	0.35	0.01	0.01	0.02	0.00	182.50	182.50	0.00	0.00	182.59
Total	**0.10**	**0.77**	**0.91**	**0.00**	**0.42**	**0.03**	**0.46**	**0.01**	**0.03**	**0.04**	**0.00**	**457.97**	**457.97**	**0.00**	**0.00**	**458.12**

3.4 Architectural Coating - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

3.4 Architectural Coating - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.67**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	49.11	49.11	0.00	0.00	49.14
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**49.11**	**49.11**	**0.00**	**0.00**	**49.14**

3.4 Architectural Coating - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	48.93	48.93	0.00	0.00	48.95
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**48.93**	**48.93**	**0.00**	**0.00**	**48.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.66**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	48.93	48.93	0.00	0.00	48.95
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**48.93**	**48.93**	**0.00**	**0.00**	**48.95**

3.4 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**2.66**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	48.52	48.52	0.00	0.00	48.54
Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**48.52**	**48.52**	**0.00**	**0.00**	**48.54**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**2.66**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.11	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	48.52	48.52	0.00	0.00	48.54
Total	**0.01**	**0.01**	**0.11**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**	**0.00**	**48.52**	**48.52**	**0.00**	**0.00**	**48.54**

3.5 Trenching - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.27	0.87	0.00		0.01	0.01		0.01	0.01	0.00	168.65	168.65	0.01	0.00	168.78
Total	**0.08**	**0.27**	**0.87**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.85	3.85	0.00	0.00	3.86
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.85**	**3.85**	**0.00**	**0.00**	**3.86**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.27	0.87	0.00		0.01	0.01		0.01	0.01	0.00	168.65	168.65	0.01	0.00	168.78
Total	**0.08**	**0.27**	**0.87**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.85	3.85	0.00	0.00	3.86
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.85**	**3.85**	**0.00**	**0.00**	**3.86**

3.6 Paving - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.18	1.09	2.17	0.00		0.03	0.03		0.03	0.03	0.00	301.00	301.00	0.01	0.00	301.30
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**1.09**	**2.17**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**301.00**	**301.00**	**0.01**	**0.00**	**301.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	11.18	11.18	0.00	0.00	11.18
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.18**	**11.18**	**0.00**	**0.00**	**11.18**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.18	1.09	2.17	0.00		0.03	0.03		0.03	0.03	0.00	301.00	301.00	0.01	0.00	301.30
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**1.09**	**2.17**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**301.00**	**301.00**	**0.01**	**0.00**	**301.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	11.18	11.18	0.00	0.00	11.18
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**11.18**	**11.18**	**0.00**	**0.00**	**11.18**

CalEEMod Construction Emissions for the Kern County General Plan Buildout Alternative Mojave Desert Air Basin

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 3 Construction 2021-2024

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.65	1000sqft
Single Family Housing	288	Dwelling Unit
Strip Mall	2.16	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

Trips and VMT -

Architectural Coating -

Vehicle Trips -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	3.49	8.37	9.92	0.02	0.47	0.41	0.88	0.03	0.40	0.43	0.00	2,069.30	2,069.30	0.11	0.00	2,071.70
2022	2.67	3.44	5.14	0.01	0.23	0.15	0.38	0.00	0.14	0.15	0.00	1,079.88	1,079.88	0.05	0.00	1,080.91
2023	2.63	3.13	5.08	0.01	0.23	0.12	0.36	0.00	0.12	0.13	0.00	1,078.27	1,078.27	0.05	0.00	1,079.24
2024	2.62	2.88	5.07	0.01	0.23	0.11	0.34	0.00	0.11	0.11	0.00	1,085.09	1,085.09	0.04	0.00	1,086.02
Total	**11.41**	**17.82**	**25.21**	**0.05**	**1.16**	**0.79**	**1.96**	**0.03**	**0.77**	**0.82**	**0.00**	**5,312.54**	**5,312.54**	**0.25**	**0.00**	**5,317.87**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2021	3.49	8.37	9.92	0.02	0.34	0.41	0.75	0.01	0.40	0.42	0.00	2,069.30	2,069.30	0.11	0.00	2,071.70
2022	2.67	3.44	5.14	0.01	0.23	0.15	0.38	0.00	0.14	0.15	0.00	1,079.88	1,079.88	0.05	0.00	1,080.91
2023	2.63	3.13	5.08	0.01	0.23	0.12	0.36	0.00	0.12	0.13	0.00	1,078.27	1,078.27	0.05	0.00	1,079.24
2024	2.62	2.88	5.07	0.01	0.23	0.11	0.34	0.00	0.11	0.11	0.00	1,085.09	1,085.09	0.04	0.00	1,086.02
Total	**11.41**	**17.82**	**25.21**	**0.05**	**1.03**	**0.79**	**1.83**	**0.01**	**0.77**	**0.81**	**0.00**	**5,312.54**	**5,312.54**	**0.25**	**0.00**	**5,317.87**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.21	0.00	0.21	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.48	2.88	2.76	0.01		0.13	0.13		0.13	0.13	0.00	669.31	669.31	0.04	0.00	670.12
Total	**0.48**	**2.88**	**2.76**	**0.01**	**0.21**	**0.13**	**0.34**	**0.02**	**0.13**	**0.15**	**0.00**	**669.31**	**669.31**	**0.04**	**0.00**	**670.12**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.48	2.88	2.76	0.01		0.13	0.13		0.13	0.13	0.00	669.31	669.31	0.04	0.00	670.12
Total	**0.48**	**2.88**	**2.76**	**0.01**	**0.08**	**0.13**	**0.21**	**0.01**	**0.13**	**0.14**	**0.00**	**669.31**	**669.31**	**0.04**	**0.00**	**670.12**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.01	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	10.05	10.05	0.00	0.00	10.06
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.05**	**10.05**	**0.00**	**0.00**	**10.06**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.54	3.14	4.10	0.01		0.14	0.14		0.14	0.14	0.00	831.37	831.37	0.04	0.00	832.29
Total	**0.54**	**3.14**	**4.10**	**0.01**		**0.14**	**0.14**		**0.14**	**0.14**	**0.00**	**831.37**	**831.37**	**0.04**	**0.00**	**832.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.41	0.30	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.96	107.96	0.00	0.00	108.00
Worker	0.04	0.05	0.50	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	94.63	94.63	0.00	0.00	94.71
Total	**0.08**	**0.46**	**0.80**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**202.59**	**202.59**	**0.00**	**0.00**	**202.71**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.54	3.14	4.10	0.01		0.14	0.14		0.14	0.14	0.00	831.37	831.37	0.04	0.00	832.29
Total	**0.54**	**3.14**	**4.10**	**0.01**		**0.14**	**0.14**		**0.14**	**0.14**	**0.00**	**831.37**	**831.37**	**0.04**	**0.00**	**832.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.41	0.30	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.96	107.96	0.00	0.00	108.00
Worker	0.04	0.05	0.50	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	94.63	94.63	0.00	0.00	94.71
Total	**0.08**	**0.46**	**0.80**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**202.59**	**202.59**	**0.00**	**0.00**	**202.71**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.51	2.81	4.07	0.01		0.12	0.12		0.12	0.12	0.00	828.19	828.19	0.04	0.00	829.05
Total	**0.51**	**2.81**	**4.07**	**0.01**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**828.19**	**828.19**	**0.04**	**0.00**	**829.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.39	0.29	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.52	107.52	0.00	0.00	107.55
Worker	0.04	0.05	0.45	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	92.81	92.81	0.00	0.00	92.88
Total	**0.08**	**0.44**	**0.74**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**200.33**	**200.33**	**0.00**	**0.00**	**200.43**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.51	2.81	4.07	0.01		0.12	0.12		0.12	0.12	0.00	828.19	828.19	0.04	0.00	829.05
Total	**0.51**	**2.81**	**4.07**	**0.01**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**828.19**	**828.19**	**0.04**	**0.00**	**829.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.39	0.29	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.52	107.52	0.00	0.00	107.55

Worker	0.04	0.05	0.45	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	92.81	92.81	0.00	0.00	92.88
Total	**0.08**	**0.44**	**0.74**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**200.33**	**200.33**	**0.00**	**0.00**	**200.43**

3.3 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.48	2.53	4.06	0.01		0.10	0.10		0.10	0.10	0.00	828.19	828.19	0.04	0.00	829.00
Total	**0.48**	**2.53**	**4.06**	**0.01**		**0.10**	**0.10**		**0.10**	**0.10**	**0.00**	**828.19**	**828.19**	**0.04**	**0.00**	**829.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.37	0.28	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.50	107.50	0.00	0.00	107.53
Worker	0.04	0.05	0.42	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	91.47	91.47	0.00	0.00	91.55
Total	**0.07**	**0.42**	**0.70**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**198.97**	**198.97**	**0.00**	**0.00**	**199.08**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.48	2.53	4.06	0.01		0.10	0.10		0.10	0.10	0.00	828.19	828.19	0.04	0.00	829.00
Total	**0.48**	**2.53**	**4.06**	**0.01**		**0.10**	**0.10**		**0.10**	**0.10**	**0.00**	**828.19**	**828.19**	**0.04**	**0.00**	**829.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.37	0.28	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.50	107.50	0.00	0.00	107.53
Worker	0.04	0.05	0.42	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	91.47	91.47	0.00	0.00	91.55
Total	**0.07**	**0.42**	**0.70**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**198.97**	**198.97**	**0.00**	**0.00**	**199.08**

3.3 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.46	2.30	4.09	0.01		0.08	0.08		0.08	0.08	0.00	834.56	834.56	0.04	0.00	835.33
Total	**0.46**	**2.30**	**4.09**	**0.01**		**0.08**	**0.08**		**0.08**	**0.08**	**0.00**	**834.56**	**834.56**	**0.04**	**0.00**	**835.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.37	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.30	108.30	0.00	0.00	108.33
Worker	0.04	0.04	0.39	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	90.96	90.96	0.00	0.00	91.03
Total	**0.07**	**0.41**	**0.66**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**199.26**	**199.26**	**0.00**	**0.00**	**199.36**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.46	2.30	4.09	0.01		0.08	0.08		0.08	0.08	0.00	834.56	834.56	0.04	0.00	835.33
Total	**0.46**	**2.30**	**4.09**	**0.01**		**0.08**	**0.08**		**0.08**	**0.08**	**0.00**	**834.56**	**834.56**	**0.04**	**0.00**	**835.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.37	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.30	108.30	0.00	0.00	108.33
Worker	0.04	0.04	0.39	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	90.96	90.96	0.00	0.00	91.03
Total	**0.07**	**0.41**	**0.66**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**199.26**	**199.26**	**0.00**	**0.00**	**199.36**

3.4 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**2.09**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	18.57	18.57	0.00	0.00	18.59
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**18.57**	**18.57**	**0.00**	**0.00**	**18.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.20	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.33
Total	**2.09**	**0.20**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	18.57	18.57	0.00	0.00	18.59
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**18.57**	**18.57**	**0.00**	**0.00**	**18.59**

3.4 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**2.08**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.01	0.01	0.09	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	18.21	18.21	0.00	0.00	18.23
Total	**0.01**	**0.01**	**0.09**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**18.21**	**18.21**	**0.00**	**0.00**	**18.23**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.18	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.20
Total	**2.08**	**0.18**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.09	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	18.21	18.21	0.00	0.00	18.23
Total	**0.01**	**0.01**	**0.09**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**18.21**	**18.21**	**0.00**	**0.00**	**18.23**

3.4 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**2.07**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.95	17.95	0.00	0.00	17.97
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.95**	**17.95**	**0.00**	**0.00**	**17.97**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.17	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**2.07**	**0.17**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.95	17.95	0.00	0.00	17.97
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.95**	**17.95**	**0.00**	**0.00**	**17.97**

3.4 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**2.09**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.85	17.85	0.00	0.00	17.87
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.85**	**17.85**	**0.00**	**0.00**	**17.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.16	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.41	33.41	0.00	0.00	33.45
Total	**2.09**	**0.16**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.85	17.85	0.00	0.00	17.87
Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.85**	**17.85**	**0.00**	**0.00**	**17.87**

3.5 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.13	0.68	0.86	0.00		0.04	0.04		0.04	0.04	0.00	166.09	166.09	0.01	0.00	166.30

Total	**0.13**	**0.68**	**0.86**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.96	3.96	0.00	0.00	3.97
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.96**	**3.96**	**0.00**	**0.00**	**3.97**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.13	0.68	0.86	0.00		0.04	0.04		0.04	0.04	0.00	166.09	166.09	0.01	0.00	166.30
Total	**0.13**	**0.68**	**0.86**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.96	3.96	0.00	0.00	3.97
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.96**	**3.96**	**0.00**	**0.00**	**3.97**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	0.99	0.96	0.00		0.07	0.07		0.07	0.07	0.00	129.00	129.00	0.01	0.00	129.27
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.16**	**0.99**	**0.96**	**0.00**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**129.00**	**129.00**	**0.01**	**0.00**	**129.27**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.07	5.07	0.00	0.00	5.07
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**5.07**	**5.07**	**0.00**	**0.00**	**5.07**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	0.99	0.96	0.00		0.07	0.07		0.07	0.07	0.00	129.00	129.00	0.01	0.00	129.27
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.16**	**0.99**	**0.96**	**0.00**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**129.00**	**129.00**	**0.01**	**0.00**	**129.27**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.07	5.07	0.00	0.00	5.07
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**5.07**	**5.07**	**0.00**	**0.00**	**5.07**

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 4 Construction 2025-2028

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.65	1000sqft
Single Family Housing	288	Dwelling Unit
Strip Mall	2.16	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

Trips and VMT -

Architectural Coating -

Vehicle Trips -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	3.30	6.41	9.97	0.02	0.86	0.27	1.13	0.24	0.27	0.51	0.00	2,191.32	2,191.32	0.10	0.00	2,193.41
2026	2.59	2.63	5.01	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,079.63	1,079.63	0.04	0.00	1,080.51
2027	2.59	2.63	5.01	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,079.63	1,079.63	0.04	0.00	1,080.51
2028	2.58	2.62	4.99	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,075.50	1,075.50	0.04	0.00	1,076.37
Total	**11.06**	**14.29**	**24.98**	**0.05**	**1.55**	**0.57**	**2.12**	**0.24**	**0.54**	**0.81**	**0.00**	**5,426.08**	**5,426.08**	**0.22**	**0.00**	**5,430.80**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2025	3.30	6.41	9.97	0.02	0.50	0.27	0.77	0.10	0.27	0.36	0.00	2,191.32	2,191.32	0.10	0.00	2,193.41
2026	2.59	2.63	5.01	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,079.63	1,079.63	0.04	0.00	1,080.51
2027	2.59	2.63	5.01	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,079.63	1,079.63	0.04	0.00	1,080.51
2028	2.58	2.62	4.99	0.01	0.23	0.10	0.33	0.00	0.09	0.10	0.00	1,075.50	1,075.50	0.04	0.00	1,076.37
Total	**11.06**	**14.29**	**24.98**	**0.05**	**1.19**	**0.57**	**1.76**	**0.10**	**0.54**	**0.66**	**0.00**	**5,426.08**	**5,426.08**	**0.22**	**0.00**	**5,430.80**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.59	0.00	0.59	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.48	2.52	3.05	0.01		0.10	0.10		0.10	0.10	0.00	793.04	793.04	0.04	0.00	793.86
Total	**0.48**	**2.52**	**3.05**	**0.01**	**0.59**	**0.10**	**0.69**	**0.24**	**0.10**	**0.34**	**0.00**	**793.04**	**793.04**	**0.04**	**0.00**	**793.86**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	10.34	10.34	0.00	0.00	10.35
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.34**	**10.34**	**0.00**	**0.00**	**10.35**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.23	0.00	0.23	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.48	2.52	3.05	0.01		0.10	0.10		0.10	0.10	0.00	793.04	793.04	0.04	0.00	793.86
Total	**0.48**	**2.52**	**3.05**	**0.01**	**0.23**	**0.10**	**0.33**	**0.09**	**0.10**	**0.19**	**0.00**	**793.04**	**793.04**	**0.04**	**0.00**	**793.86**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	10.34	10.34	0.00	0.00	10.35
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**10.34**	**10.34**	**0.00**	**0.00**	**10.35**

3.3 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

3.3 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90

Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

3.3 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

3.3 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.07	4.05	0.01		0.07	0.07		0.07	0.07	0.00	828.19	828.19	0.03	0.00	828.91
Total	**0.43**	**2.07**	**4.05**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.91**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.35	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.46	107.46	0.00	0.00	107.49
Worker	0.03	0.04	0.36	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	89.19	89.19	0.00	0.00	89.26
Total	**0.06**	**0.39**	**0.63**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**196.65**	**196.65**	**0.00**	**0.00**	**196.75**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.07	4.05	0.01		0.07	0.07		0.07	0.07	0.00	828.19	828.19	0.03	0.00	828.91
Total	**0.43**	**2.07**	**4.05**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.91**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.35	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.46	107.46	0.00	0.00	107.49
Worker	0.03	0.04	0.36	0.00	0.16	0.01	0.17	0.00	0.00	0.01	0.00	89.19	89.19	0.00	0.00	89.26
Total	**0.06**	**0.39**	**0.63**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.01**	**0.02**	**0.00**	**196.65**	**196.65**	**0.00**	**0.00**	**196.75**

3.4 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

3.4 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

3.4 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.08**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

3.4 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**2.07**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.51	17.51	0.00	0.00	17.52
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.51**	**17.51**	**0.00**	**0.00**	**17.52**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.23	0.00		0.01	0.01		0.01	0.01	0.00	33.15	33.15	0.00	0.00	33.19
Total	**2.07**	**0.15**	**0.23**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.51	17.51	0.00	0.00	17.52
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.51**	**17.51**	**0.00**	**0.00**	**17.52**

3.5 Trenching - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.48	0.87	0.00		0.02	0.02		0.02	0.02	0.00	168.65	168.65	0.01	0.00	168.82

Total	**0.10**	**0.48**	**0.87**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.81	3.81	0.00	0.00	3.81
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.81**	**3.81**	**0.00**	**0.00**	**3.81**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.48	0.87	0.00		0.02	0.02		0.02	0.02	0.00	168.65	168.65	0.01	0.00	168.82
Total	**0.10**	**0.48**	**0.87**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.81	3.81	0.00	0.00	3.81
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.81**	**3.81**	**0.00**	**0.00**	**3.81**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.12	0.77	0.96	0.00		0.05	0.05		0.05	0.05	0.00	130.98	130.98	0.01	0.00	131.19
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.12**	**0.77**	**0.96**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.87	4.87	0.00	0.00	4.87
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.87**	**4.87**	**0.00**	**0.00**	**4.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.12	0.77	0.96	0.00		0.05	0.05		0.05	0.05	0.00	130.98	130.98	0.01	0.00	131.19
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.12**	**0.77**	**0.96**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.87	4.87	0.00	0.00	4.87
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.87**	**4.87**	**0.00**	**0.00**	**4.87**

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 5 Construction 2029-2032

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.65	1000sqft
Single Family Housing	288	Dwelling Unit
Strip Mall	2.16	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

Trips and VMT -

Architectural Coating -

Vehicle Trips -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2029	3.21	5.83	9.60	0.02	0.47	0.25	0.72	0.03	0.24	0.27	0.00	2,072.03	2,072.03	0.09	0.00	2,073.96
2030	2.50	1.92	4.87	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,074.98	1,074.98	0.04	0.00	1,075.72
2031	2.50	1.92	4.87	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,074.98	1,074.98	0.04	0.00	1,075.72
2032	2.51	1.93	4.89	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,079.10	1,079.10	0.04	0.00	1,079.84
Total	**10.72**	**11.60**	**24.23**	**0.05**	**1.16**	**0.43**	**1.59**	**0.03**	**0.39**	**0.45**	**0.00**	**5,301.09**	**5,301.09**	**0.21**	**0.00**	**5,305.24**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2029	3.21	5.83	9.60	0.02	0.35	0.25	0.59	0.01	0.24	0.26	0.00	2,072.03	2,072.03	0.09	0.00	2,073.96
2030	2.50	1.92	4.87	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,074.98	1,074.98	0.04	0.00	1,075.72
2031	2.50	1.92	4.87	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,074.98	1,074.98	0.04	0.00	1,075.72
2032	2.51	1.93	4.89	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,079.10	1,079.10	0.04	0.00	1,079.84
Total	**10.72**	**11.60**	**24.23**	**0.05**	**1.04**	**0.43**	**1.46**	**0.01**	**0.39**	**0.44**	**0.00**	**5,301.09**	**5,301.09**	**0.21**	**0.00**	**5,305.24**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.21	0.00	0.21	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.39	1.94	2.69	0.01		0.08	0.08		0.08	0.08	0.00	674.50	674.50	0.03	0.00	675.17
Total	**0.39**	**1.94**	**2.69**	**0.01**	**0.21**	**0.08**	**0.29**	**0.02**	**0.08**	**0.10**	**0.00**	**674.50**	**674.50**	**0.03**	**0.00**	**675.17**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.59	9.59	0.00	0.00	9.59
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.59**	**9.59**	**0.00**	**0.00**	**9.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.39	1.94	2.69	0.01		0.08	0.08		0.08	0.08	0.00	674.50	674.50	0.03	0.00	675.17
Total	**0.39**	**1.94**	**2.69**	**0.01**	**0.08**	**0.08**	**0.16**	**0.01**	**0.08**	**0.09**	**0.00**	**674.50**	**674.50**	**0.03**	**0.00**	**675.17**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.59	9.59	0.00	0.00	9.59
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.59**	**9.59**	**0.00**	**0.00**	**9.59**

3.3 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	2.08	4.07	0.01		0.07	0.07		0.07	0.07	0.00	831.37	831.37	0.03	0.00	832.10
Total	**0.43**	**2.08**	**4.07**	**0.01**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.36	0.27	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.87	107.87	0.00	0.00	107.90
Worker	0.03	0.04	0.37	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	89.54	89.54	0.00	0.00	89.60
Total	**0.06**	**0.40**	**0.64**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**197.41**	**197.41**	**0.00**	**0.00**	**197.50**

3.3 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.05	0.01		0.04	0.04		0.04	0.04	0.00	831.37	831.37	0.03	0.00	832.00
Total	**0.37**	**1.45**	**4.05**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.77	107.77	0.00	0.00	107.80
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.73	85.73	0.00	0.00	85.78
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**193.50**	**193.50**	**0.00**	**0.00**	**193.58**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.05	0.01		0.04	0.04		0.04	0.04	0.00	831.37	831.37	0.03	0.00	832.00
Total	**0.37**	**1.45**	**4.05**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.77	107.77	0.00	0.00	107.80

Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.73	85.73	0.00	0.00	85.78
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**193.50**	**193.50**	**0.00**	**0.00**	**193.58**

3.3 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.05	0.01		0.04	0.04		0.04	0.04	0.00	831.37	831.37	0.03	0.00	832.00
Total	**0.37**	**1.45**	**4.05**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.77	107.77	0.00	0.00	107.80
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.73	85.73	0.00	0.00	85.78
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**193.50**	**193.50**	**0.00**	**0.00**	**193.58**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.37	1.45	4.05	0.01		0.04	0.04		0.04	0.04	0.00	831.37	831.37	0.03	0.00	832.00
Total	**0.37**	**1.45**	**4.05**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**832.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.77	107.77	0.00	0.00	107.80
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.73	85.73	0.00	0.00	85.78
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**193.50**	**193.50**	**0.00**	**0.00**	**193.58**

3.3 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.46	4.07	0.01		0.04	0.04		0.04	0.04	0.00	834.56	834.56	0.03	0.00	835.18
Total	**0.37**	**1.46**	**4.07**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**834.56**	**834.56**	**0.03**	**0.00**	**835.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.18	108.18	0.00	0.00	108.21
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	86.06	86.06	0.00	0.00	86.11
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**194.24**	**194.24**	**0.00**	**0.00**	**194.32**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.46	4.07	0.01		0.04	0.04		0.04	0.04	0.00	834.56	834.56	0.03	0.00	835.18
Total	**0.37**	**1.46**	**4.07**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**834.56**	**834.56**	**0.03**	**0.00**	**835.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.33	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.18	108.18	0.00	0.00	108.21
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	86.06	86.06	0.00	0.00	86.11
Total	**0.06**	**0.36**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**194.24**	**194.24**	**0.00**	**0.00**	**194.32**

3.4 Architectural Coating - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.07**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.24	0.00		0.01	0.01		0.01	0.01	0.00	33.28	33.28	0.00	0.00	33.32
Total	**2.07**	**0.15**	**0.24**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	17.57	17.57	0.00	0.00	17.59
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**17.57**	**17.57**	**0.00**	**0.00**	**17.59**

3.4 Architectural Coating - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.83	16.83	0.00	0.00	16.84
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.83**	**16.83**	**0.00**	**0.00**	**16.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.83	16.83	0.00	0.00	16.84
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.83**	**16.83**	**0.00**	**0.00**	**16.84**

3.4 Architectural Coating - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.83	16.83	0.00	0.00	16.84
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.83**	**16.83**	**0.00**	**0.00**	**16.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.83	16.83	0.00	0.00	16.84
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.83**	**16.83**	**0.00**	**0.00**	**16.84**

3.4 Architectural Coating - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**2.08**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.06	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.89	16.89	0.00	0.00	16.90
Total	**0.01**	**0.01**	**0.06**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.89**	**16.89**	**0.00**	**0.00**	**16.90**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.24	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.44
Total	**2.08**	**0.11**	**0.24**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.06	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.89	16.89	0.00	0.00	16.90
Total	**0.01**	**0.01**	**0.06**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.89**	**16.89**	**0.00**	**0.00**	**16.90**

3.5 Trenching - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.48	0.87	0.00		0.02	0.02		0.02	0.02	0.00	168.65	168.65	0.01	0.00	168.82

Total	**0.10**	**0.48**	**0.87**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.81	3.81	0.00	0.00	3.81
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.81**	**3.81**	**0.00**	**0.00**	**3.81**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.48	0.87	0.00		0.02	0.02		0.02	0.02	0.00	168.65	168.65	0.01	0.00	168.82
Total	**0.10**	**0.48**	**0.87**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**168.65**	**168.65**	**0.01**	**0.00**	**168.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.81	3.81	0.00	0.00	3.81
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.81**	**3.81**	**0.00**	**0.00**	**3.81**

3.6 Paving - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.12	0.77	0.96	0.00		0.05	0.05		0.05	0.05	0.00	130.98	130.98	0.01	0.00	131.19
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.12**	**0.77**	**0.96**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.87	4.87	0.00	0.00	4.87
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.87**	**4.87**	**0.00**	**0.00**	**4.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.12	0.77	0.96	0.00		0.05	0.05		0.05	0.05	0.00	130.98	130.98	0.01	0.00	131.19
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.12**	**0.77**	**0.96**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.87	4.87	0.00	0.00	4.87
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.87**	**4.87**	**0.00**	**0.00**	**4.87**

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 6 Construction 2033-2036

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.65	1000sqft
Single Family Housing	288	Dwelling Unit
Strip Mall	2.16	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

Trips and VMT -

Architectural Coating -

Vehicle Trips -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2033	3.00	4.05	9.31	0.02	0.47	0.14	0.61	0.03	0.14	0.16	0.00	2,054.61	2,054.61	0.08	0.00	2,056.21
2034	2.49	1.92	4.85	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,070.86	1,070.86	0.04	0.00	1,071.60
2035	2.47	1.68	4.80	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,072.71	1,072.71	0.03	0.00	1,073.40
2036	2.48	1.69	4.82	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,076.82	1,076.82	0.03	0.00	1,077.51
Total	**10.44**	**9.34**	**23.78**	**0.05**	**1.16**	**0.28**	**1.44**	**0.03**	**0.27**	**0.30**	**0.00**	**5,275.00**	**5,275.00**	**0.18**	**0.00**	**5,278.72**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2033	3.00	4.05	9.31	0.02	0.34	0.14	0.48	0.01	0.14	0.15	0.00	2,054.61	2,054.61	0.08	0.00	2,056.21
2034	2.49	1.92	4.85	0.01	0.23	0.06	0.29	0.00	0.05	0.06	0.00	1,070.86	1,070.86	0.04	0.00	1,071.60
2035	2.47	1.68	4.80	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,072.71	1,072.71	0.03	0.00	1,073.40
2036	2.48	1.69	4.82	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,076.82	1,076.82	0.03	0.00	1,077.51
Total	**10.44**	**9.34**	**23.78**	**0.05**	**1.03**	**0.28**	**1.31**	**0.01**	**0.27**	**0.29**	**0.00**	**5,275.00**	**5,275.00**	**0.18**	**0.00**	**5,278.72**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.21	0.00	0.21	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.32	1.22	2.60	0.01		0.05	0.05		0.05	0.05	0.00	669.31	669.31	0.03	0.00	669.86
Total	**0.32**	**1.22**	**2.60**	**0.01**	**0.21**	**0.05**	**0.26**	**0.02**	**0.05**	**0.07**	**0.00**	**669.31**	**669.31**	**0.03**	**0.00**	**669.86**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.11	9.11	0.00	0.00	9.11
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.11**	**9.11**	**0.00**	**0.00**	**9.11**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.32	1.22	2.60	0.01		0.05	0.05		0.05	0.05	0.00	669.31	669.31	0.03	0.00	669.86
Total	**0.32**	**1.22**	**2.60**	**0.01**	**0.08**	**0.05**	**0.13**	**0.01**	**0.05**	**0.06**	**0.00**	**669.31**	**669.31**	**0.03**	**0.00**	**669.86**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	9.11	9.11	0.00	0.00	9.11
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**9.11**	**9.11**	**0.00**	**0.00**	**9.11**

3.3 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.04	0.01		0.04	0.04		0.04	0.04	0.00	828.19	828.19	0.03	0.00	828.81
Total	**0.37**	**1.45**	**4.04**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.32	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.36	107.36	0.00	0.00	107.39
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.40	85.40	0.00	0.00	85.45
Total	**0.06**	**0.35**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.76**	**192.76**	**0.00**	**0.00**	**192.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.04	0.01		0.04	0.04		0.04	0.04	0.00	828.19	828.19	0.03	0.00	828.81
Total	**0.37**	**1.45**	**4.04**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.32	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.36	107.36	0.00	0.00	107.39
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.40	85.40	0.00	0.00	85.45
Total	**0.06**	**0.35**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.76**	**192.76**	**0.00**	**0.00**	**192.84**

3.3 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.04	0.01		0.04	0.04		0.04	0.04	0.00	828.19	828.19	0.03	0.00	828.81
Total	**0.37**	**1.45**	**4.04**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.32	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.36	107.36	0.00	0.00	107.39
Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.40	85.40	0.00	0.00	85.45
Total	**0.06**	**0.35**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.76**	**192.76**	**0.00**	**0.00**	**192.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.37	1.45	4.04	0.01		0.04	0.04		0.04	0.04	0.00	828.19	828.19	0.03	0.00	828.81
Total	**0.37**	**1.45**	**4.04**	**0.01**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.32	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.36	107.36	0.00	0.00	107.39

Worker	0.03	0.03	0.28	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	85.40	85.40	0.00	0.00	85.45
Total	**0.06**	**0.35**	**0.53**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.76**	**192.76**	**0.00**	**0.00**	**192.84**

3.3 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

3.3 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.25	4.06	0.01		0.02	0.02		0.02	0.02	0.00	834.56	834.56	0.03	0.00	835.14
Total	**0.35**	**1.25**	**4.06**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**834.56**	**834.56**	**0.03**	**0.00**	**835.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.15	108.15	0.00	0.00	108.17
Worker	0.02	0.02	0.24	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	84.18	84.18	0.00	0.00	84.23
Total	**0.05**	**0.33**	**0.49**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.33**	**192.33**	**0.00**	**0.00**	**192.40**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.25	4.06	0.01		0.02	0.02		0.02	0.02	0.00	834.56	834.56	0.03	0.00	835.14
Total	**0.35**	**1.25**	**4.06**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**834.56**	**834.56**	**0.03**	**0.00**	**835.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	108.15	108.15	0.00	0.00	108.17
Worker	0.02	0.02	0.24	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	84.18	84.18	0.00	0.00	84.23
Total	**0.05**	**0.33**	**0.49**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**192.33**	**192.33**	**0.00**	**0.00**	**192.40**

3.4 Architectural Coating - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.76	16.76	0.00	0.00	16.77
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.76**	**16.76**	**0.00**	**0.00**	**16.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.76	16.76	0.00	0.00	16.77
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.76**	**16.76**	**0.00**	**0.00**	**16.77**

3.4 Architectural Coating - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.76	16.76	0.00	0.00	16.77
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.76**	**16.76**	**0.00**	**0.00**	**16.77**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.11	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.11**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.76	16.76	0.00	0.00	16.77
Total	**0.01**	**0.01**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.76**	**16.76**	**0.00**	**0.00**	**16.77**

3.4 Architectural Coating - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

3.4 Architectural Coating - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**2.09**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.52	16.52	0.00	0.00	16.53
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.52**	**16.52**	**0.00**	**0.00**	**16.53**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.41	33.41	0.00	0.00	33.43
Total	**2.09**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.41**	**33.41**	**0.00**	**0.00**	**33.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.52	16.52	0.00	0.00	16.53
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.52**	**16.52**	**0.00**	**0.00**	**16.53**

3.5 Trenching - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.33	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.23

Total	**0.08**	**0.33**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.23**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.59	3.59	0.00	0.00	3.59
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.59**	**3.59**	**0.00**	**0.00**	**3.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.33	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.23
Total	**0.08**	**0.33**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.23**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.59	3.59	0.00	0.00	3.59
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.59**	**3.59**	**0.00**	**0.00**	**3.59**

3.6 Paving - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.09	0.58	0.95	0.00		0.03	0.03		0.03	0.03	0.00	130.98	130.98	0.01	0.00	131.14
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.09**	**0.58**	**0.95**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.66	4.66	0.00	0.00	4.66
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.66**	**4.66**	**0.00**	**0.00**	**4.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.09	0.58	0.95	0.00		0.03	0.03		0.03	0.03	0.00	130.98	130.98	0.01	0.00	131.14
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.09**	**0.58**	**0.95**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**130.98**	**130.98**	**0.01**	**0.00**	**131.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.66	4.66	0.00	0.00	4.66
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.66**	**4.66**	**0.00**	**0.00**	**4.66**

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 7 Construction 2037-2040

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.65	1000sqft
Single Family Housing	288	Dwelling Unit
Strip Mall	2.16	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

Trips and VMT -

Architectural Coating -

Vehicle Trips -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2037	2.92	3.28	9.20	0.02	0.47	0.09	0.56	0.03	0.09	0.12	0.00	2,054.02	2,054.02	0.07	0.00	2,055.47
2038	2.47	1.68	4.80	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,072.71	1,072.71	0.03	0.00	1,073.40
2039	2.46	1.67	4.79	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,068.60	1,068.60	0.03	0.00	1,069.28
2040	2.37	1.22	3.64	0.01	0.18	0.03	0.21	0.00	0.03	0.03	0.00	813.11	813.11	0.02	0.00	813.62
Total	**10.22**	**7.85**	**22.43**	**0.05**	**1.11**	**0.20**	**1.31**	**0.03**	**0.20**	**0.23**	**0.00**	**5,008.44**	**5,008.44**	**0.15**	**0.00**	**5,011.77**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2037	2.92	3.28	9.20	0.02	0.34	0.09	0.44	0.01	0.09	0.11	0.00	2,054.02	2,054.02	0.07	0.00	2,055.47
2038	2.47	1.68	4.80	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,072.71	1,072.71	0.03	0.00	1,073.40
2039	2.46	1.67	4.79	0.01	0.23	0.04	0.27	0.00	0.04	0.04	0.00	1,068.60	1,068.60	0.03	0.00	1,069.28
2040	2.37	1.22	3.64	0.01	0.18	0.03	0.21	0.00	0.03	0.03	0.00	813.11	813.11	0.02	0.00	813.62
Total	**10.22**	**7.85**	**22.43**	**0.05**	**0.98**	**0.20**	**1.19**	**0.01**	**0.20**	**0.22**	**0.00**	**5,008.44**	**5,008.44**	**0.15**	**0.00**	**5,011.77**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.21	0.00	0.21	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.29	0.87	2.56	0.01		0.03	0.03		0.03	0.03	0.00	669.31	669.31	0.02	0.00	669.80
Total	**0.29**	**0.87**	**2.56**	**0.01**	**0.21**	**0.03**	**0.24**	**0.02**	**0.03**	**0.05**	**0.00**	**669.31**	**669.31**	**0.02**	**0.00**	**669.80**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	8.91	8.91	0.00	0.00	8.91
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.91**	**8.91**	**0.00**	**0.00**	**8.91**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.29	0.87	2.56	0.01		0.03	0.03		0.03	0.03	0.00	669.31	669.31	0.02	0.00	669.80
Total	**0.29**	**0.87**	**2.56**	**0.01**	**0.08**	**0.03**	**0.11**	**0.01**	**0.03**	**0.04**	**0.00**	**669.31**	**669.31**	**0.02**	**0.00**	**669.80**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	8.91	8.91	0.00	0.00	8.91
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**8.91**	**8.91**	**0.00**	**0.00**	**8.91**

3.3 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

3.3 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	1.24	4.04	0.01		0.02	0.02		0.02	0.02	0.00	831.37	831.37	0.03	0.00	831.96
Total	**0.35**	**1.24**	**4.04**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**831.37**	**831.37**	**0.03**	**0.00**	**831.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.25	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.73	107.73	0.00	0.00	107.76

Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.86	83.86	0.00	0.00	83.91
Total	**0.05**	**0.33**	**0.48**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**191.59**	**191.59**	**0.00**	**0.00**	**191.67**

3.3 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.34	1.24	4.03	0.01		0.02	0.02		0.02	0.02	0.00	828.19	828.19	0.03	0.00	828.77
Total	**0.34**	**1.24**	**4.03**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.77**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.24	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.32	107.32	0.00	0.00	107.35
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.54	83.54	0.00	0.00	83.58
Total	**0.05**	**0.33**	**0.47**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**190.86**	**190.86**	**0.00**	**0.00**	**190.93**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.34	1.24	4.03	0.01		0.02	0.02		0.02	0.02	0.00	828.19	828.19	0.03	0.00	828.77
Total	**0.34**	**1.24**	**4.03**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**828.19**	**828.19**	**0.03**	**0.00**	**828.77**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.03	0.31	0.24	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	107.32	107.32	0.00	0.00	107.35
Worker	0.02	0.02	0.23	0.00	0.16	0.01	0.17	0.00	0.01	0.01	0.00	83.54	83.54	0.00	0.00	83.58
Total	**0.05**	**0.33**	**0.47**	**0.00**	**0.20**	**0.02**	**0.22**	**0.00**	**0.02**	**0.02**	**0.00**	**190.86**	**190.86**	**0.00**	**0.00**	**190.93**

3.3 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.25	0.88	3.02	0.01		0.02	0.02		0.02	0.02	0.00	621.14	621.14	0.02	0.00	621.57
Total	**0.25**	**0.88**	**3.02**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**621.14**	**621.14**	**0.02**	**0.00**	**621.57**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.23	0.18	0.00	0.03	0.01	0.03	0.00	0.01	0.01	0.00	80.47	80.47	0.00	0.00	80.49
Worker	0.01	0.01	0.16	0.00	0.12	0.00	0.13	0.00	0.00	0.01	0.00	61.94	61.94	0.00	0.00	61.97
Total	**0.03**	**0.24**	**0.34**	**0.00**	**0.15**	**0.01**	**0.16**	**0.00**	**0.01**	**0.02**	**0.00**	**142.41**	**142.41**	**0.00**	**0.00**	**142.46**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.25	0.88	3.02	0.01		0.02	0.02		0.02	0.02	0.00	621.14	621.14	0.02	0.00	621.57
Total	**0.25**	**0.88**	**3.02**	**0.01**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**621.14**	**621.14**	**0.02**	**0.00**	**621.57**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.23	0.18	0.00	0.03	0.01	0.03	0.00	0.01	0.01	0.00	80.47	80.47	0.00	0.00	80.49
Worker	0.01	0.01	0.16	0.00	0.12	0.00	0.13	0.00	0.00	0.01	0.00	61.94	61.94	0.00	0.00	61.97
Total	**0.03**	**0.24**	**0.34**	**0.00**	**0.15**	**0.01**	**0.16**	**0.00**	**0.01**	**0.02**	**0.00**	**142.41**	**142.41**	**0.00**	**0.00**	**142.46**

3.4 Architectural Coating - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

3.4 Architectural Coating - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.31
Total	**2.08**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.46	16.46	0.00	0.00	16.47
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.46**	**16.46**	**0.00**	**0.00**	**16.47**

3.4 Architectural Coating - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.40	16.40	0.00	0.00	16.40
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.40**	**16.40**	**0.00**	**0.00**	**16.40**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.10	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.15	33.15	0.00	0.00	33.18
Total	**2.07**	**0.10**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.15**	**33.15**	**0.00**	**0.00**	**33.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.40	16.40	0.00	0.00	16.40
Total	**0.00**	**0.00**	**0.05**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.40**	**16.40**	**0.00**	**0.00**	**16.40**

3.4 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**2.07**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.27	16.27	0.00	0.00	16.28
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.27**	**16.27**	**0.00**	**0.00**	**16.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.23	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.30
Total	**2.07**	**0.09**	**0.23**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**33.28**	**33.28**	**0.00**	**0.00**	**33.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	16.27	16.27	0.00	0.00	16.28
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**16.27**	**16.27**	**0.00**	**0.00**	**16.28**

3.5 Trenching - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.27	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.22

Total	**0.08**	**0.27**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.22**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.51	3.51	0.00	0.00	3.52
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.51**	**3.51**	**0.00**	**0.00**	**3.52**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.27	0.85	0.00		0.01	0.01		0.01	0.01	0.00	166.09	166.09	0.01	0.00	166.22
Total	**0.08**	**0.27**	**0.85**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**166.09**	**166.09**	**0.01**	**0.00**	**166.22**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.51	3.51	0.00	0.00	3.52
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**3.51**	**3.51**	**0.00**	**0.00**	**3.52**

3.6 Paving - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.47	0.93	0.00		0.01	0.01		0.01	0.01	0.00	129.00	129.00	0.01	0.00	129.13
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.47**	**0.93**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**129.00**	**129.00**	**0.01**	**0.00**	**129.13**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.49	4.49	0.00	0.00	4.49
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.49**	**4.49**	**0.00**	**0.00**	**4.49**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.47	0.93	0.00		0.01	0.01		0.01	0.01	0.00	129.00	129.00	0.01	0.00	129.13
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.47**	**0.93**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**129.00**	**129.00**	**0.01**	**0.00**	**129.13**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.49	4.49	0.00	0.00	4.49
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**4.49**	**4.49**	**0.00**	**0.00**	**4.49**

CalEEMod Operation Emissions for the Kern County General Plan Buildout Alternative San Joaquin Valley Air Basin and Mojave Desert Air Basin

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 1 Operation 2017

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	175	1000sqft
Apartments Low Rise	33	Dwelling Unit
Single Family Housing	250	Dwelling Unit
Strip Mall	15.111	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Energy	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	1,457.04	1,457.04	0.05	0.03	1,466.04
Mobile	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Waste						0.00	0.00		0.00	0.00	268.29	0.00	268.29	15.86	0.00	601.26
Water						0.00	0.00		0.00	0.00	0.00	66.07	66.07	0.42	0.02	82.30
Total	**19.16**	**103.17**	**130.59**	**0.31**	**25.64**	**3.80**	**29.51**	**1.26**	**3.80**	**5.13**	**268.29**	**34,226.22**	**34,494.51**	**17.22**	**0.05**	**34,871.92**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Energy	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	1,457.04	1,457.04	0.05	0.03	1,466.04
Mobile	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Waste						0.00	0.00		0.00	0.00	268.29	0.00	268.29	15.86	0.00	601.26
Water						0.00	0.00		0.00	0.00	0.00	66.07	66.07	0.42	0.02	82.30
Total	**19.16**	**103.17**	**130.59**	**0.31**	**25.64**	**3.80**	**29.51**	**1.26**	**3.80**	**5.13**	**268.29**	**34,226.22**	**34,494.51**	**17.22**	**0.05**	**34,871.92**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Unmitigated	15.80	102.52	128.11	0.31	25.64	3.80	29.44	1.26	3.80	5.06	0.00	32,577.04	32,577.04	0.88	0.00	32,595.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	219.45	219.45	219.45	2,300,538	2,300,538
Racquet Club	985.25	985.25	985.25	10,328,573	10,328,573
Single Family Housing	2,392.50	2,392.50	2392.50	25,081,056	25,081,056
Strip Mall	870.54	870.54	870.54	9,126,094	9,126,094
Total	4,467.74	4,467.74	4,467.74	46,836,261	46,836,261

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	735.87	735.87	0.03	0.01	740.48
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	735.87	735.87	0.03	0.01	740.48

NaturalGas Mitigated	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	721.17	721.17	0.01	0.01	725.56
NaturalGas Unmitigated	0.07	0.63	0.33	0.00		0.00	0.05		0.00	0.05	0.00	721.17	721.17	0.01	0.01	725.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	9.5587e+006	0.05	0.44	0.19	0.00		0.00	0.04		0.00	0.04	0.00	510.09	510.09	0.01	0.01	513.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.07**	**0.63**	**0.34**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**721.17**	**721.17**	**0.01**	**0.01**	**725.56**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	772594	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	41.23	41.23	0.00	0.00	41.48
Racquet Club	3.09225e+006	0.02	0.15	0.13	0.00		0.00	0.01		0.00	0.01	0.00	165.01	165.01	0.00	0.00	166.02
Single Family Housing	9.5587e+006	0.05	0.44	0.19	0.00		0.00	0.04		0.00	0.04	0.00	510.09	510.09	0.01	0.01	513.19
Strip Mall	90666	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	4.84	4.84	0.00	0.00	4.87
Total		**0.07**	**0.63**	**0.34**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**	**0.00**	**721.17**	**721.17**	**0.01**	**0.01**	**725.56**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.74076e+006					506.41	0.02	0.01	509.58
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**735.87**	**0.03**	**0.01**	**740.48**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	153447					44.64	0.00	0.00	44.92
Racquet Club	462000					134.40	0.01	0.00	135.24
Single Family Housing	1.74076e+006					506.41	0.02	0.01	509.58
Strip Mall	173323					50.42	0.00	0.00	50.74
Total						**735.87**	**0.03**	**0.01**	**740.48**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Unmitigated	3.29	0.02	2.15	0.00		0.00	0.02		0.00	0.02	0.00	126.07	126.07	0.01	0.00	126.89
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.59					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.63					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	122.60	122.60	0.00	0.00	123.34
Landscaping	0.07	0.02	2.15	0.00		0.00	0.01		0.00	0.01	0.00	3.47	3.47	0.00	0.00	3.54
Total	**3.30**	**0.02**	**2.15**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**126.07**	**126.07**	**0.00**	**0.00**	**126.88**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.59					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.63					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	122.60	122.60	0.00	0.00	123.34
Landscaping	0.07	0.02	2.15	0.00		0.00	0.01		0.00	0.01	0.00	3.47	3.47	0.00	0.00	3.54
Total	**3.30**	**0.02**	**2.15**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**126.07**	**126.07**	**0.00**	**0.00**	**126.88**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					66.07	0.42	0.02	82.30
Unmitigated					66.07	0.42	0.02	82.30
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			

Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	16.2885 / 10.2688					36.10	0.37	0.01	47.91
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**66.07**	**0.42**	**0.02**	**82.29**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.15008 / 1.35549					4.76	0.05	0.00	6.32
Racquet Club	10.3501 / 6.34358					22.75	0.00	0.01	25.32
Single Family Housing	16.2885 / 10.2688					36.10	0.37	0.01	47.91
Strip Mall	1.11924 / 0.685983					2.46	0.00	0.00	2.74
Total						**66.07**	**0.42**	**0.02**	**82.29**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					268.29	15.86	0.00	601.26
Unmitigated					268.29	15.86	0.00	601.26
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78
Single Family Housing	293.15					59.51	3.52	0.00	133.36
Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**268.29**	**15.86**	**0.00**	**601.27**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	15.18					3.08	0.18	0.00	6.91
Racquet Club	997.5					202.48	11.97	0.00	453.78
Single Family Housing	293.15					59.51	3.52	0.00	133.36

Strip Mall	15.87					3.22	0.19	0.00	7.22
Total						**268.29**	**15.86**	**0.00**	**601.27**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 2 Operation 2021

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Racquet Club	350	1000sqft
Apartments Low Rise	99	Dwelling Unit
Single Family Housing	757	Dwelling Unit
Strip Mall	91.696	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Energy	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	4,269.71	4,269.71	0.14	0.08	4,296.10
Mobile	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Waste						0.00	0.00		0.00	0.00	613.94	0.00	613.94	36.28	0.00	1,375.88
Water						0.00	0.00		0.00	0.00	0.00	184.03	184.03	1.27	0.07	231.32
Total	**50.59**	**239.48**	**338.27**	**1.05**	**87.01**	**8.70**	**95.92**	**1.72**	**8.22**	**10.14**	**613.94**	**108,070.52**	**108,684.46**	**39.99**	**0.16**	**109,570.49**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Energy	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	4,269.71	4,269.71	0.14	0.08	4,296.10
Mobile	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Waste						0.00	0.00		0.00	0.00	613.94	0.00	613.94	36.28	0.00	1,375.88
Water						0.00	0.00		0.00	0.00	0.00	184.03	184.03	1.27	0.07	231.32
Total	**50.59**	**239.48**	**338.27**	**1.05**	**87.01**	**8.70**	**95.92**	**1.72**	**8.22**	**10.14**	**613.94**	**108,070.52**	**108,684.46**	**39.99**	**0.16**	**109,570.49**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Unmitigated	41.05	237.64	330.94	1.04	87.01	8.70	95.72	1.72	8.22	9.94	0.00	103,235.45	103,235.45	2.28	0.00	103,283.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	658.35	658.35	658.35	6,901,615	6,901,615
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Single Family Housing	7,244.49	7,244.49	7244.49	75,945,438	75,945,438
Strip Mall	5,282.61	5,282.61	5282.61	55,378,621	55,378,621
Total	15,155.95	15,155.95	15,155.95	158,882,819	158,882,819

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,242.09	2,242.09	0.10	0.04	2,256.14
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,242.09	2,242.09	0.10	0.04	2,256.14

NaturalGas Mitigated	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	2,027.62	2,027.62	0.04	0.04	2,039.96
NaturalGas Unmitigated	0.20	1.77	0.89	0.01		0.00	0.14		0.00	0.14	0.00	2,027.62	2,027.62	0.04	0.04	2,039.96
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.89437e+007	0.16	1.33	0.57	0.01		0.00	0.11		0.00	0.11	0.00	1,544.55	1,544.55	0.03	0.03	1,553.95
Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.20**	**1.77**	**0.89**	**0.01**		**0.00**	**0.14**		**0.00**	**0.14**	**0.00**	**2,027.63**	**2,027.63**	**0.04**	**0.04**	**2,039.97**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	2.31778e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	123.69	123.69	0.00	0.00	124.44
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Single Family Housing	2.89437e+007	0.16	1.33	0.57	0.01		0.00	0.11		0.00	0.11	0.00	1,544.55	1,544.55	0.03	0.03	1,553.95
Strip Mall	550176	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	29.36	29.36	0.00	0.00	29.54
Total		**0.20**	**1.77**	**0.89**	**0.01**		**0.00**	**0.14**		**0.00**	**0.14**	**0.00**	**2,027.63**	**2,027.63**	**0.04**	**0.04**	**2,039.97**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	5.27103e+006					1,533.40	0.07	0.03	1,543.01
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,242.09**	**0.10**	**0.04**	**2,256.14**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	460342					133.92	0.01	0.00	134.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Single Family Housing	5.27103e+006					1,533.40	0.07	0.03	1,543.01
Strip Mall	1.05175e+006					305.97	0.01	0.01	307.88
Total						**2,242.09**	**0.10**	**0.04**	**2,256.14**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Unmitigated	9.34	0.07	6.44	0.00		0.00	0.06		0.00	0.06	0.00	381.33	381.33	0.02	0.01	383.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.04	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	370.83	370.83	0.01	0.01	373.08
Landscaping	0.20	0.07	6.44	0.00		0.00	0.04		0.00	0.04	0.00	10.50	10.50	0.01	0.00	10.71
Total	**9.35**	**0.07**	**6.44**	**0.00**		**0.00**	**0.07**		**0.00**	**0.07**	**0.00**	**381.33**	**381.33**	**0.02**	**0.01**	**383.79**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	1.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.04	0.00	0.00	0.00		0.00	0.03		0.00	0.03	0.00	370.83	370.83	0.01	0.01	373.08
Landscaping	0.20	0.07	6.44	0.00		0.00	0.04		0.00	0.04	0.00	10.50	10.50	0.01	0.00	10.71
Total	**9.35**	**0.07**	**6.44**	**0.00**		**0.00**	**0.07**		**0.00**	**0.07**	**0.00**	**381.33**	**381.33**	**0.02**	**0.01**	**383.79**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					184.03	1.27	0.07	231.32
Unmitigated					184.03	1.27	0.07	231.32
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			

Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	49.3216 / 31.0941					109.30	1.13	0.04	145.08
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**184.02**	**1.28**	**0.08**	**231.32**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	6.45025 / 4.06646					14.29	0.15	0.01	18.97
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Single Family Housing	49.3216 / 31.0941					109.30	1.13	0.04	145.08
Strip Mall	6.79245 / 4.16311					14.93	0.00	0.01	16.62
Total						**184.02**	**1.28**	**0.08**	**231.32**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					613.94	36.28	0.00	1,375.88
Unmitigated					613.94	36.28	0.00	1,375.88
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	887.65					180.18	10.65	0.00	403.81
Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**613.94**	**36.29**	**0.00**	**1,375.89**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	45.54					9.24	0.55	0.00	20.72
Racquet Club	1995					404.97	23.93	0.00	907.56
Single Family Housing	887.65					180.18	10.65	0.00	403.81

Strip Mall	96.29					19.55	1.16	0.00	43.80
Total						**613.94**	**36.29**	**0.00**	**1,375.89**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 3 Operation 2025

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	317.57	1000sqft
Racquet Club	350	1000sqft
Apartments Low Rise	149	Dwelling Unit
Single Family Housing	1893	Dwelling Unit
Regional Shopping Center	79.392	1000sqft
Strip Mall	96.11	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	66.97	0.79	71.16	0.02		0.00	7.97		0.00	7.97	746.10	908.75	1,654.86	0.72	0.07	1,691.45
Energy	0.48	4.13	2.02	0.03		0.00	0.33		0.00	0.33	0.00	10,658.12	10,658.12	0.36	0.19	10,724.06
Mobile	76.71	406.88	613.92	2.28	192.40	16.06	208.46	3.78	14.54	18.32	0.00	222,563.51	222,563.51	4.32	0.00	222,654.27
Waste						0.00	0.00		0.00	0.00	966.83	0.00	966.83	57.14	0.00	2,166.72
Water						0.00	0.00		0.00	0.00	0.00	492.98	492.98	3.04	0.18	611.89
Total	**144.16**	**411.80**	**687.10**	**2.33**	**192.40**	**16.06**	**216.76**	**3.78**	**14.54**	**26.62**	**1,712.93**	**234,623.36**	**236,336.30**	**65.58**	**0.44**	**237,848.39**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	66.97	0.79	71.16	0.02		0.00	7.97		0.00	7.97	746.10	908.75	1,654.86	0.72	0.07	1,691.45
Energy	0.48	4.13	2.02	0.03		0.00	0.33		0.00	0.33	0.00	10,658.12	10,658.12	0.36	0.19	10,724.06
Mobile	76.71	406.88	613.92	2.28	192.40	16.06	208.46	3.78	14.54	18.32	0.00	222,563.51	222,563.51	4.32	0.00	222,654.27
Waste						0.00	0.00		0.00	0.00	966.83	0.00	966.83	57.14	0.00	2,166.72
Water						0.00	0.00		0.00	0.00	0.00	492.98	492.98	3.04	0.18	611.89
Total	**144.16**	**411.80**	**687.10**	**2.33**	**192.40**	**16.06**	**216.76**	**3.78**	**14.54**	**26.62**	**1,712.93**	**234,623.36**	**236,336.30**	**65.58**	**0.44**	**237,848.39**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	76.71	406.88	613.92	2.28	192.40	16.06	208.46	3.78	14.54	18.32	0.00	222,563.51	222,563.51	4.32	0.00	222,654.27
Unmitigated	76.71	406.88	613.92	2.28	192.40	16.06	208.46	3.78	14.54	18.32	0.00	222,563.51	222,563.51	4.32	0.00	222,654.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	990.85	990.85	990.85	10,387,279	10,387,279
General Office Building	3,496.45	3,496.45	3496.45	36,653,940	36,653,940
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	3,409.09	3,409.09	3409.09	35,738,198	35,738,198
Single Family Housing	18,116.01	18,116.01	18116.01	189,913,756	189,913,756
Strip Mall	5,536.90	5,536.90	5536.90	58,044,400	58,044,400
Total	33,519.80	33,519.80	33,519.80	351,394,718	351,394,718

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	5,917.81	5,917.81	0.27	0.10	5,954.89
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	5,917.81	5,917.81	0.27	0.10	5,954.89
NaturalGas Mitigated	0.48	4.13	2.02	0.03		0.00	0.33		0.00	0.33	0.00	4,740.31	4,740.31	0.09	0.09	4,769.16
NaturalGas Unmitigated	0.48	4.13	2.02	0.03		0.00	0.33		0.00	0.33	0.00	4,740.31	4,740.31	0.09	0.09	4,769.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29
General Office Building	5.72579e+006	0.03	0.28	0.24	0.00		0.00	0.02		0.00	0.02	0.00	305.55	305.55	0.01	0.01	307.41
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	476352	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	25.42	25.42	0.00	0.00	25.57
Single Family Housing	7.23784e+007	0.39	3.34	1.42	0.02		0.00	0.27		0.00	0.27	0.00	3,862.39	3,862.39	0.07	0.07	3,885.89
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.47**	**4.13**	**2.02**	**0.02**		**0.00**	**0.32**		**0.00**	**0.32**	**0.00**	**4,740.31**	**4,740.31**	**0.09**	**0.09**	**4,769.16**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	3.48838e+006	0.02	0.16	0.07	0.00		0.00	0.01		0.00	0.01	0.00	186.15	186.15	0.00	0.00	187.29

General Office Building	5.72579e+006	0.03	0.28	0.24	0.00		0.00	0.02		0.00	0.02	0.00	305.55	305.55	0.01	0.01	307.41
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	476352	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	25.42	25.42	0.00	0.00	25.57
Single Family Housing	7.23784e+007	0.39	3.34	1.42	0.02		0.00	0.27		0.00	0.27	0.00	3,862.39	3,862.39	0.07	0.07	3,885.89
Strip Mall	576672	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	30.77	30.77	0.00	0.00	30.96
Total		**0.47**	**4.13**	**2.02**	**0.02**		**0.00**	**0.32**		**0.00**	**0.32**	**0.00**	**4,740.31**	**4,740.31**	**0.09**	**0.09**	**4,769.16**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	692838					201.55	0.01	0.00	202.82
General Office Building	3.53138e+006					1,027.32	0.05	0.02	1,033.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	910626					264.91	0.01	0.00	266.57
Single Family Housing	1.31811e+007					3,834.52	0.17	0.07	3,858.55
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**5,917.80**	**0.26**	**0.10**	**5,954.90**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	692838					201.55	0.01	0.00	202.82

General Office Building	3.53138e+006					1,027.32	0.05	0.02	1,033.76
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	910626					264.91	0.01	0.00	266.57
Single Family Housing	1.31811e+007					3,834.52	0.17	0.07	3,858.55
Strip Mall	1.1024e+006					320.70	0.01	0.01	322.71
Total						**5,917.80**	**0.26**	**0.10**	**5,954.90**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	66.97	0.79	71.16	0.02		0.00	7.97		0.00	7.97	746.10	908.75	1,654.86	0.72	0.07	1,691.45
Unmitigated	66.97	0.79	71.16	0.02		0.00	7.97		0.00	7.97	746.10	908.75	1,654.86	0.72	0.07	1,691.45
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	17.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	45.41	0.61	55.85	0.02		0.00	7.89		0.00	7.88	746.10	883.70	1,629.81	0.70	0.07	1,665.90
Landscaping	0.46	0.18	15.31	0.00		0.00	0.08		0.00	0.08	0.00	25.05	25.05	0.02	0.00	25.55
Total	**66.97**	**0.79**	**71.16**	**0.02**		**0.00**	**7.97**		**0.00**	**7.96**	**746.10**	**908.75**	**1,654.86**	**0.72**	**0.07**	**1,691.45**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	17.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	45.41	0.61	55.85	0.02		0.00	7.89		0.00	7.88	746.10	883.70	1,629.81	0.70	0.07	1,665.90
Landscaping	0.46	0.18	15.31	0.00		0.00	0.08		0.00	0.08	0.00	25.05	25.05	0.02	0.00	25.55
Total	**66.97**	**0.79**	**71.16**	**0.02**		**0.00**	**7.97**		**0.00**	**7.96**	**746.10**	**908.75**	**1,654.86**	**0.72**	**0.07**	**1,691.45**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					492.98	3.04	0.18	611.89
Unmitigated					492.98	3.04	0.18	611.89
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56
General Office Building	56.4429 / 34.594					124.07	0.01	0.04	138.09
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	5.88062 / 3.60425					12.93	0.00	0.00	14.39
Single Family Housing	123.337 / 77.7557					273.32	2.81	0.10	362.79
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**492.98**	**3.04**	**0.18**	**611.90**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	9.70795 / 6.12023					21.51	0.22	0.01	28.56

General Office Building	56.4429 / 34.594					124.07	0.01	0.04	138.09
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	5.88062 / 3.60425					12.93	0.00	0.00	14.39
Single Family Housing	123.337 / 77.7557					273.32	2.81	0.10	362.79
Strip Mall	7.11911 / 4.36333					15.65	0.00	0.01	17.42
Total						**492.98**	**3.04**	**0.18**	**611.90**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					966.83	57.14	0.00	2,166.72
Unmitigated					966.83	57.14	0.00	2,166.72
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	295.34					59.95	3.54	0.00	134.35
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	83.36					16.92	1.00	0.00	37.92
Single Family Housing	2219.74					450.59	26.63	0.00	1,009.79
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**966.83**	**57.13**	**0.00**	**2,166.71**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	68.54					13.91	0.82	0.00	31.18
General Office Building	295.34					59.95	3.54	0.00	134.35
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	83.36					16.92	1.00	0.00	37.92
Single Family Housing	2219.74					450.59	26.63	0.00	1,009.79
Strip Mall	100.92					20.49	1.21	0.00	45.91
Total						**966.83**	**57.13**	**0.00**	**2,166.71**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 4 Operation 2029

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	635.139	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	266	Dwelling Unit
Single Family Housing	3544	Dwelling Unit
Regional Shopping Center	158.785	1000sqft
Strip Mall	159.82	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	131.74	1.56	140.02	0.04		0.00	15.89		0.00	15.89	1,489.83	1,697.10	3,186.93	1.44	0.14	3,259.27
Energy	0.96	8.31	4.27	0.05		0.00	0.66		0.00	0.66	0.00	22,195.93	22,195.93	0.76	0.39	22,333.30
Mobile	133.91	675.21	1,079.21	4.50	383.16	26.05	409.22	7.43	24.79	32.22	0.00	427,348.88	427,348.88	7.94	0.00	427,515.58
Waste						0.00	0.00		0.00	0.00	1,544.55	0.00	1,544.55	91.28	0.00	3,461.44
Water						0.00	0.00		0.00	0.00	0.00	927.72	927.72	5.68	0.34	1,151.53
Total	**266.61**	**685.08**	**1,223.50**	**4.59**	**383.16**	**26.05**	**425.77**	**7.43**	**24.79**	**48.77**	**3,034.38**	**452,169.63**	**455,204.01**	**107.10**	**0.87**	**457,721.12**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	131.74	1.56	140.02	0.04		0.00	15.89		0.00	15.89	1,489.83	1,697.10	3,186.93	1.44	0.14	3,259.27
Energy	0.96	8.31	4.27	0.05		0.00	0.66		0.00	0.66	0.00	22,195.93	22,195.93	0.76	0.39	22,333.30
Mobile	133.91	675.21	1,079.21	4.50	383.16	26.05	409.22	7.43	24.79	32.22	0.00	427,348.88	427,348.88	7.94	0.00	427,515.58
Waste						0.00	0.00		0.00	0.00	1,544.55	0.00	1,544.55	91.28	0.00	3,461.44
Water						0.00	0.00		0.00	0.00	0.00	927.72	927.72	5.68	0.34	1,151.53
Total	**266.61**	**685.08**	**1,223.50**	**4.59**	**383.16**	**26.05**	**425.77**	**7.43**	**24.79**	**48.77**	**3,034.38**	**452,169.63**	**455,204.01**	**107.10**	**0.87**	**457,721.12**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	133.91	675.21	1,079.21	4.50	383.16	26.05	409.22	7.43	24.79	32.22	0.00	427,348.88	427,348.88	7.94	0.00	427,515.58
Unmitigated	133.91	675.21	1,079.21	4.50	383.16	26.05	409.22	7.43	24.79	32.22	0.00	427,348.88	427,348.88	7.94	0.00	427,515.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,768.90	1,768.90	1768.90	18,543,732	18,543,732
General Office Building	6,992.88	6,992.88	6992.88	73,307,764	73,307,764
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	6,818.23	6,818.23	6818.23	71,476,847	71,476,847
Single Family Housing	33,916.08	33,916.08	33916.08	355,549,050	355,549,050
Strip Mall	9,207.23	9,207.23	9207.23	96,521,236	96,521,236
Total	66,801.32	66,801.32	66,801.32	700,291,582	700,291,582

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	12,699.02	12,699.02	0.57	0.22	12,778.60
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	12,699.02	12,699.02	0.57	0.22	12,778.60
NaturalGas Mitigated	0.96	8.31	4.27	0.05		0.00	0.66		0.00	0.66	0.00	9,496.91	9,496.91	0.18	0.17	9,554.70
NaturalGas Unmitigated	0.96	8.31	4.27	0.05		0.00	0.66		0.00	0.66	0.00	9,496.91	9,496.91	0.18	0.17	9,554.70
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	1.14516e+007	0.06	0.56	0.47	0.00		0.00	0.04		0.00	0.04	0.00	611.10	611.10	0.01	0.01	614.82
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	952710	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.84	50.84	0.00	0.00	51.15
Single Family Housing	1.35504e+008	0.73	6.24	2.66	0.04		0.00	0.50		0.00	0.50	0.00	7,231.01	7,231.01	0.14	0.13	7,275.02
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.96**	**8.31**	**4.27**	**0.04**		**0.00**	**0.64**		**0.00**	**0.64**	**0.00**	**9,496.91**	**9,496.91**	**0.19**	**0.18**	**9,554.71**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	6.22758e+006	0.03	0.29	0.12	0.00		0.00	0.02		0.00	0.02	0.00	332.33	332.33	0.01	0.01	334.35
General Office Building	1.14516e+007	0.06	0.56	0.47	0.00		0.00	0.04		0.00	0.04	0.00	611.10	611.10	0.01	0.01	614.82
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	952710	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.84	50.84	0.00	0.00	51.15
Single Family Housing	1.35504e+008	0.73	6.24	2.66	0.04		0.00	0.50		0.00	0.50	0.00	7,231.01	7,231.01	0.14	0.13	7,275.02
Strip Mall	958896	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.17	51.17	0.00	0.00	51.48
Total		**0.96**	**8.31**	**4.27**	**0.04**		**0.00**	**0.64**		**0.00**	**0.64**	**0.00**	**9,496.91**	**9,496.91**	**0.19**	**0.18**	**9,554.71**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	7.06275e+006					2,054.63	0.09	0.04	2,067.51
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.82126e+006					529.83	0.02	0.01	533.15
Single Family Housing	2.4677e+007					7,178.84	0.32	0.12	7,223.82
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**12,699.02**	**0.56**	**0.22**	**12,778.61**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.23688e+006					359.82	0.02	0.01	362.08
General Office Building	7.06275e+006					2,054.63	0.09	0.04	2,067.51
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	1.82126e+006					529.83	0.02	0.01	533.15
Single Family Housing	2.4677e+007					7,178.84	0.32	0.12	7,223.82
Strip Mall	1.83309e+006					533.27	0.02	0.01	536.61
Total						**12,699.02**	**0.56**	**0.22**	**12,778.61**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	131.74	1.56	140.02	0.04		0.00	15.89		0.00	15.89	1,489.83	1,697.10	3,186.93	1.44	0.14	3,259.27

Unmitigated	131.74	1.56	140.02	0.04		0.00	15.89		0.00	15.89	1,489.83	1,697.10	3,186.93	1.44	0.14	3,259.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.45					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	32.80					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	90.63	1.23	111.51	0.04		0.00	15.74		0.00	15.74	1,489.83	1,650.36	3,140.20	1.39	0.14	3,211.60
Landscaping	0.85	0.33	28.52	0.00		0.00	0.16		0.00	0.16	0.00	46.74	46.74	0.04	0.00	47.67
Total	**131.73**	**1.56**	**140.03**	**0.04**		**0.00**	**15.90**		**0.00**	**15.90**	**1,489.83**	**1,697.10**	**3,186.94**	**1.43**	**0.14**	**3,259.27**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.45					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	32.80					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	90.63	1.23	111.51	0.04		0.00	15.74		0.00	15.74	1,489.83	1,650.36	3,140.20	1.39	0.14	3,211.60
Landscaping	0.85	0.33	28.52	0.00		0.00	0.16		0.00	0.16	0.00	46.74	46.74	0.04	0.00	47.67
Total	**131.73**	**1.56**	**140.03**	**0.04**		**0.00**	**15.90**		**0.00**	**15.90**	**1,489.83**	**1,697.10**	**3,186.94**	**1.43**	**0.14**	**3,259.27**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					927.72	5.68	0.34	1,151.53
Unmitigated					927.72	5.68	0.34	1,151.53
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	112.886 / 69.1881					248.14	0.01	0.09	276.19
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	11.7612 / 7.2085					25.85	0.00	0.01	28.78
Single Family Housing	230.906 / 145.571					511.69	5.27	0.18	679.21
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96
Total						**927.71**	**5.68**	**0.33**	**1,151.54**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	17.331 / 10.926					38.41	0.40	0.01	50.98
General Office Building	112.886 / 69.1881					248.14	0.01	0.09	276.19
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	11.7612 / 7.2085					25.85	0.00	0.01	28.78
Single Family Housing	230.906 / 145.571					511.69	5.27	0.18	679.21
Strip Mall	11.8383 / 7.25571					26.02	0.00	0.01	28.96
Total						**927.71**	**5.68**	**0.33**	**1,151.54**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					1,544.55	91.28	0.00	3,461.44
Unmitigated					1,544.55	91.28	0.00	3,461.44
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	590.68					119.90	7.09	0.00	268.71
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	166.72					33.84	2.00	0.00	75.84
Single Family Housing	4155.76					843.58	49.85	0.00	1,890.52
Strip Mall	167.81					34.06	2.01	0.00	76.34
Total						**1,544.54**	**91.28**	**0.00**	**3,461.43**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	122.36					24.84	1.47	0.00	55.66
General Office Building	590.68					119.90	7.09	0.00	268.71
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	166.72					33.84	2.00	0.00	75.84
Single Family Housing	4155.76					843.58	49.85	0.00	1,890.52
Strip Mall	167.81					34.06	2.01	0.00	76.34
Total						**1,544.54**	**91.28**	**0.00**	**3,461.43**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 5 Operation 2033

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	952.709	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	5323	Dwelling Unit
Regional Shopping Center	238.177	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.38	2.33	210.00	0.07		0.00	23.83		0.00	23.83	2,233.56	2,549.72	4,783.29	2.16	0.20	4,891.79
Energy	1.38	11.89	5.92	0.08		0.00	0.95		0.00	0.95	0.00	31,401.86	31,401.86	1.06	0.55	31,596.18
Mobile	183.68	926.20	1,480.39	6.17	525.60	35.74	561.33	10.20	34.00	44.19	0.00	586,207.17	586,207.17	10.89	0.00	586,435.85
Waste						0.00	0.00		0.00	0.00	2,057.43	0.00	2,057.43	121.59	0.00	4,610.84
Water						0.00	0.00		0.00	0.00	0.00	1,341.25	1,341.25	8.53	0.49	1,671.18
Total	**380.44**	**940.42**	**1,696.31**	**6.32**	**525.60**	**35.74**	**586.11**	**10.20**	**34.00**	**68.97**	**4,290.99**	**621,500.00**	**625,791.00**	**144.23**	**1.24**	**629,205.84**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.38	2.33	210.00	0.07		0.00	23.83		0.00	23.83	2,233.56	2,549.72	4,783.29	2.16	0.20	4,891.79
Energy	1.38	11.89	5.92	0.08		0.00	0.95		0.00	0.95	0.00	31,401.86	31,401.86	1.06	0.55	31,596.18
Mobile	183.68	926.20	1,480.39	6.17	525.60	35.74	561.33	10.20	34.00	44.19	0.00	586,207.17	586,207.17	10.89	0.00	586,435.85
Waste						0.00	0.00		0.00	0.00	2,057.43	0.00	2,057.43	121.59	0.00	4,610.84
Water						0.00	0.00		0.00	0.00	0.00	1,341.25	1,341.25	8.53	0.49	1,671.18
Total	**380.44**	**940.42**	**1,696.31**	**6.32**	**525.60**	**35.74**	**586.11**	**10.20**	**34.00**	**68.97**	**4,290.99**	**621,500.00**	**625,791.00**	**144.23**	**1.24**	**629,205.84**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	183.68	926.20	1,480.39	6.17	525.60	35.74	561.33	10.20	34.00	44.19	0.00	586,207.17	586,207.17	10.89	0.00	586,435.85
Unmitigated	183.68	926.20	1,480.39	6.17	525.60	35.74	561.33	10.20	34.00	44.19	0.00	586,207.17	586,207.17	10.89	0.00	586,435.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	10,489.33	10,489.33	10489.33	109,961,703	109,961,703
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	10,227.32	10,227.32	10227.32	107,215,045	107,215,045
Single Family Housing	50,941.11	50,941.11	50941.11	534,025,844	534,025,844
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	91,633.36	91,633.36	91,633.36	960,610,803	960,610,803

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	17,776.73	17,776.73	0.80	0.30	17,888.12
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	17,776.73	17,776.73	0.80	0.30	17,888.12
NaturalGas Mitigated	1.38	11.89	5.92	0.08		0.00	0.95		0.00	0.95	0.00	13,625.14	13,625.14	0.26	0.25	13,708.06
NaturalGas Unmitigated	1.38	11.89	5.92	0.08		0.00	0.95		0.00	0.95	0.00	13,625.14	13,625.14	0.26	0.25	13,708.06
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.71773e+007	0.09	0.84	0.71	0.01		0.00	0.06		0.00	0.06	0.00	916.65	916.65	0.02	0.02	922.23
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.42906e+006	0.01	0.07	0.06	0.00		0.00	0.01		0.00	0.01	0.00	76.26	76.26	0.00	0.00	76.72
Single Family Housing	2.03524e+008	1.10	9.38	3.99	0.06		0.00	0.76		0.00	0.76	0.00	10,860.80	10,860.80	0.21	0.20	10,926.90
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.38**	**11.89**	**5.92**	**0.07**		**0.00**	**0.94**		**0.00**	**0.94**	**0.00**	**13,625.14**	**13,625.14**	**0.27**	**0.26**	**13,708.06**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	1.71773e+007	0.09	0.84	0.71	0.01		0.00	0.06		0.00	0.06	0.00	916.65	916.65	0.02	0.02	922.23
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.42906e+006	0.01	0.07	0.06	0.00		0.00	0.01		0.00	0.01	0.00	76.26	76.26	0.00	0.00	76.72
Single Family Housing	2.03524e+008	1.10	9.38	3.99	0.06		0.00	0.76		0.00	0.76	0.00	10,860.80	10,860.80	0.21	0.20	10,926.90
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.38**	**11.89**	**5.92**	**0.07**		**0.00**	**0.94**		**0.00**	**0.94**	**0.00**	**13,625.14**	**13,625.14**	**0.27**	**0.26**	**13,708.06**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.05941e+007					3,081.95	0.14	0.05	3,101.27
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.73189e+006					794.74	0.04	0.01	799.72
Single Family Housing	3.70643e+007					10,782.43	0.49	0.18	10,850.00
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**17,776.72**	**0.80**	**0.29**	**17,888.14**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.05941e+007					3,081.95	0.14	0.05	3,101.27
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	2.73189e+006					794.74	0.04	0.01	799.72
Single Family Housing	3.70643e+007					10,782.43	0.49	0.18	10,850.00
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**17,776.72**	**0.80**	**0.29**	**17,888.14**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	195.38	2.33	210.00	0.07		0.00	23.83		0.00	23.83	2,233.56	2,549.72	4,783.29	2.16	0.20	4,891.79

Unmitigated	195.38	2.33	210.00	0.07		0.00	23.83		0.00	23.83	2,233.56	2,549.72	4,783.29	2.16	0.20	4,891.79
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	10.85					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	47.38					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	135.86	1.84	167.16	0.07		0.00	23.59		0.00	23.59	2,233.56	2,479.52	4,713.08	2.09	0.20	4,820.19
Landscaping	1.28	0.49	42.84	0.00		0.00	0.24		0.00	0.24	0.00	70.20	70.20	0.07	0.00	71.60
Total	**195.37**	**2.33**	**210.00**	**0.07**		**0.00**	**23.83**		**0.00**	**23.83**	**2,233.56**	**2,549.72**	**4,783.28**	**2.16**	**0.20**	**4,891.79**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	10.85					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	47.38					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	135.86	1.84	167.16	0.07		0.00	23.59		0.00	23.59	2,233.56	2,479.52	4,713.08	2.09	0.20	4,820.19
Landscaping	1.28	0.49	42.84	0.00		0.00	0.24		0.00	0.24	0.00	70.20	70.20	0.07	0.00	71.60
Total	**195.37**	**2.33**	**210.00**	**0.07**		**0.00**	**23.83**		**0.00**	**23.83**	**2,233.56**	**2,549.72**	**4,783.28**	**2.16**	**0.20**	**4,891.79**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,341.25	8.53	0.49	1,671.18
Unmitigated					1,341.25	8.53	0.49	1,671.18
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					58.05	0.60	0.02	77.17
General Office Building	169.329 / 103.782					372.21	0.02	0.13	414.28
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	17.6426 / 10.8132					38.78	0.00	0.01	43.16
Single Family Housing	346.815 / 218.644					768.55	7.91	0.28	1,020.15
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,341.24**	**8.53**	**0.48**	**1,671.18**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					58.05	0.60	0.02	77.17
General Office Building	169.329 / 103.782					372.21	0.02	0.13	414.28
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	17.6426 / 10.8132					38.78	0.00	0.01	43.16
Single Family Housing	346.815 / 218.644					768.55	7.91	0.28	1,020.15
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,341.24**	**8.53**	**0.48**	**1,671.18**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					2,057.43	121.59	0.00	4,610.84
Unmitigated					2,057.43	121.59	0.00	4,610.84
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	886.02					179.85	10.63	0.00	403.06
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	250.09					50.77	3.00	0.00	113.77
Single Family Housing	6241.84					1,267.04	74.88	0.00	2,839.51
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,057.43**	**121.60**	**0.00**	**4,610.83**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	886.02					179.85	10.63	0.00	403.06
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	250.09					50.77	3.00	0.00	113.77
Single Family Housing	6241.84					1,267.04	74.88	0.00	2,839.51
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,057.43**	**121.60**	**0.00**	**4,610.83**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 6 Operation 2037

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1270.278	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	6080	Dwelling Unit
Regional Shopping Center	317.57	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	249.33	3.01	271.47	0.09		0.00	31.71		0.00	31.70	2,979.67	2,886.67	5,866.34	2.85	0.26	6,007.74
Energy	1.57	13.53	6.74	0.09		0.00	1.08		0.00	1.08	0.00	36,103.01	36,103.01	1.23	0.64	36,326.45
Mobile	194.23	973.18	1,586.01	7.10	606.60	37.77	644.37	11.71	36.11	47.82	0.00	665,210.69	665,210.69	12.08	0.00	665,464.47
Waste						0.00	0.00		0.00	0.00	2,314.49	0.00	2,314.49	136.78	0.00	5,186.92
Water						0.00	0.00		0.00	0.00	0.00	1,587.25	1,587.25	9.66	0.57	1,968.23
Total	**445.13**	**989.72**	**1,864.22**	**7.28**	**606.60**	**37.77**	**677.16**	**11.71**	**36.11**	**80.60**	**5,294.16**	**705,787.62**	**711,081.78**	**162.60**	**1.47**	**714,953.81**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	249.33	3.01	271.47	0.09		0.00	31.71		0.00	31.70	2,979.67	2,886.67	5,866.34	2.85	0.26	6,007.74
Energy	1.57	13.53	6.74	0.09		0.00	1.08		0.00	1.08	0.00	36,103.01	36,103.01	1.23	0.64	36,326.45
Mobile	194.23	973.18	1,586.01	7.10	606.60	37.77	644.37	11.71	36.11	47.82	0.00	665,210.69	665,210.69	12.08	0.00	665,464.47
Waste						0.00	0.00		0.00	0.00	2,314.49	0.00	2,314.49	136.78	0.00	5,186.92
Water						0.00	0.00		0.00	0.00	0.00	1,587.25	1,587.25	9.66	0.57	1,968.23
Total	**445.13**	**989.72**	**1,864.22**	**7.28**	**606.60**	**37.77**	**677.16**	**11.71**	**36.11**	**80.60**	**5,294.16**	**705,787.62**	**711,081.78**	**162.60**	**1.47**	**714,953.81**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	194.23	973.18	1,586.01	7.10	606.60	37.77	644.37	11.71	36.11	47.82	0.00	665,210.69	665,210.69	12.08	0.00	665,464.47
Unmitigated	194.23	973.18	1,586.01	7.10	606.60	37.77	644.37	11.71	36.11	47.82	0.00	665,210.69	665,210.69	12.08	0.00	665,464.47
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	13,985.76	13,985.76	13985.76	146,615,527	146,615,527
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	13,636.46	13,636.46	13636.46	142,953,693	142,953,693
Single Family Housing	58,185.60	58,185.60	58185.60	609,971,282	609,971,282
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	105,783.42	105,783.42	105,783.42	1,108,948,713	1,108,948,713

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	20,602.36	20,602.36	0.93	0.35	20,731.46
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	20,602.36	20,602.36	0.93	0.35	20,731.46
NaturalGas Mitigated	1.57	13.53	6.74	0.09		0.00	1.08		0.00	1.08	0.00	15,500.65	15,500.65	0.30	0.28	15,594.99
NaturalGas Unmitigated	1.57	13.53	6.74	0.09		0.00	1.08		0.00	1.08	0.00	15,500.65	15,500.65	0.30	0.28	15,594.99
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.29031e+007	0.12	1.12	0.94	0.01		0.00	0.09		0.00	0.09	0.00	1,222.20	1,222.20	0.02	0.02	1,229.64
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.90542e+006	0.01	0.09	0.08	0.00		0.00	0.01		0.00	0.01	0.00	101.68	101.68	0.00	0.00	102.30
Single Family Housing	2.32467e+008	1.25	10.71	4.56	0.07		0.00	0.87		0.00	0.87	0.00	12,405.35	12,405.35	0.24	0.23	12,480.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.56**	**13.52**	**6.74**	**0.08**		**0.00**	**1.08**		**0.00**	**1.08**	**0.00**	**15,500.66**	**15,500.66**	**0.30**	**0.29**	**15,595.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.29031e+007	0.12	1.12	0.94	0.01		0.00	0.09		0.00	0.09	0.00	1,222.20	1,222.20	0.02	0.02	1,229.64
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	1.90542e+006	0.01	0.09	0.08	0.00		0.00	0.01		0.00	0.01	0.00	101.68	101.68	0.00	0.00	102.30
Single Family Housing	2.32467e+008	1.25	10.71	4.56	0.07		0.00	0.87		0.00	0.87	0.00	12,405.35	12,405.35	0.24	0.23	12,480.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.56**	**13.52**	**6.74**	**0.08**		**0.00**	**1.08**		**0.00**	**1.08**	**0.00**	**15,500.66**	**15,500.66**	**0.30**	**0.29**	**15,595.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.41255e+007					4,109.27	0.19	0.07	4,135.02
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.64253e+006					1,059.65	0.05	0.02	1,066.29
Single Family Housing	4.23353e+007					12,315.84	0.56	0.21	12,393.01
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**20,602.36**	**0.93**	**0.35**	**20,731.47**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.41255e+007					4,109.27	0.19	0.07	4,135.02
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	3.64253e+006					1,059.65	0.05	0.02	1,066.29
Single Family Housing	4.23353e+007					12,315.84	0.56	0.21	12,393.01
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**20,602.36**	**0.93**	**0.35**	**20,731.47**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	249.33	3.01	271.47	0.09		0.00	31.71		0.00	31.70	2,979.67	2,886.67	5,866.34	2.85	0.26	6,007.74

Unmitigated	249.33	3.01	271.47	0.09		0.00	31.71		0.00	31.70	2,979.67	2,886.67	5,866.34	2.85	0.26	6,007.74
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	12.41					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	54.25					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	181.22	2.46	223.01	0.09		0.00	31.44		0.00	31.44	2,979.67	2,807.18	5,786.85	2.78	0.26	5,926.66
Landscaping	1.45	0.56	48.46	0.00		0.00	0.27		0.00	0.27	0.00	79.49	79.49	0.08	0.00	81.07
Total	**249.33**	**3.02**	**271.47**	**0.09**		**0.00**	**31.71**		**0.00**	**31.71**	**2,979.67**	**2,886.67**	**5,866.34**	**2.86**	**0.26**	**6,007.73**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	12.41					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	54.25					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	181.22	2.46	223.01	0.09		0.00	31.44		0.00	31.44	2,979.67	2,807.18	5,786.85	2.78	0.26	5,926.66
Landscaping	1.45	0.56	48.46	0.00		0.00	0.27		0.00	0.27	0.00	79.49	79.49	0.08	0.00	81.07
Total	**249.33**	**3.02**	**271.47**	**0.09**		**0.00**	**31.71**		**0.00**	**31.71**	**2,979.67**	**2,886.67**	**5,866.34**	**2.86**	**0.26**	**6,007.73**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,587.25	9.66	0.57	1,968.23
Unmitigated					1,587.25	9.66	0.57	1,968.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	225.772 / 138.376					496.29	0.02	0.18	552.38
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	23.5232 / 14.4175					51.71	0.00	0.02	57.55
Single Family Housing	396.136 / 249.738					877.85	9.04	0.31	1,165.23
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,587.25**	**9.65**	**0.57**	**1,968.24**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	225.772 / 138.376					496.29	0.02	0.18	552.38
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	23.5232 / 14.4175					51.71	0.00	0.02	57.55
Single Family Housing	396.136 / 249.738					877.85	9.04	0.31	1,165.23
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,587.25**	**9.65**	**0.57**	**1,968.24**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					2,314.49	136.78	0.00	5,186.92
Unmitigated					2,314.49	136.78	0.00	5,186.92
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1181.36					239.81	14.17	0.00	537.42
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	333.45					67.69	4.00	0.00	151.69
Single Family Housing	7129.49					1,447.22	85.53	0.00	3,243.32
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,314.49**	**136.79**	**0.00**	**5,186.92**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1181.36					239.81	14.17	0.00	537.42
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	333.45					67.69	4.00	0.00	151.69
Single Family Housing	7129.49					1,447.22	85.53	0.00	3,243.32
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,314.49**	**136.79**	**0.00**	**5,186.92**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative Phase 7 Operation 2041

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	1587.848	1000sqft
Hotel	750	Room
Racquet Club	350	1000sqft
Apartments Low Rise	400	Dwelling Unit
Single Family Housing	6838	Dwelling Unit
Regional Shopping Center	396.962	1000sqft
Strip Mall	160	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	303.11	3.69	332.75	0.11		0.00	39.56		0.00	39.56	3,723.40	3,224.42	6,947.81	3.55	0.32	7,122.05
Energy	1.76	15.17	7.57	0.10		0.00	1.21		0.00	1.21	0.00	40,808.23	40,808.23	1.39	0.72	41,060.81
Mobile	210.94	1,054.82	1,722.47	8.03	687.69	42.28	729.96	13.24	40.15	53.39	0.00	746,544.63	746,544.63	13.36	0.00	746,825.13
Waste						0.00	0.00		0.00	0.00	2,571.80	0.00	2,571.80	151.99	0.00	5,763.56
Water						0.00	0.00		0.00	0.00	0.00	1,833.69	1,833.69	10.79	0.66	2,265.98
Total	**515.81**	**1,073.68**	**2,062.79**	**8.24**	**687.69**	**42.28**	**770.73**	**13.24**	**40.15**	**94.16**	**6,295.20**	**792,410.97**	**798,706.16**	**181.08**	**1.70**	**803,037.53**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	303.11	3.69	332.75	0.11		0.00	39.56		0.00	39.56	3,723.40	3,224.42	6,947.81	3.55	0.32	7,122.05
Energy	1.76	15.17	7.57	0.10		0.00	1.21		0.00	1.21	0.00	40,808.23	40,808.23	1.39	0.72	41,060.81
Mobile	210.94	1,054.82	1,722.47	8.03	687.69	42.28	729.96	13.24	40.15	53.39	0.00	746,544.63	746,544.63	13.36	0.00	746,825.13
Waste						0.00	0.00		0.00	0.00	2,571.80	0.00	2,571.80	151.99	0.00	5,763.56
Water						0.00	0.00		0.00	0.00	0.00	1,833.69	1,833.69	10.79	0.66	2,265.98
Total	**515.81**	**1,073.68**	**2,062.79**	**8.24**	**687.69**	**42.28**	**770.73**	**13.24**	**40.15**	**94.16**	**6,295.20**	**792,410.97**	**798,706.16**	**181.08**	**1.70**	**803,037.53**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	210.94	1,054.82	1,722.47	8.03	687.69	42.28	729.96	13.24	40.15	53.39	0.00	746,544.63	746,544.63	13.36	0.00	746,825.13
Unmitigated	210.94	1,054.82	1,722.47	8.03	687.69	42.28	729.96	13.24	40.15	53.39	0.00	746,544.63	746,544.63	13.36	0.00	746,825.13
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,660.00	2,660.00	2660.00	27,885,312	27,885,312
General Office Building	17,482.21	17,482.21	17482.21	183,269,467	183,269,467
Hotel	6,127.50	6,127.50	6127.50	64,235,808	64,235,808
Racquet Club	1,970.50	1,970.50	1970.50	20,657,146	20,657,146
Regional Shopping Center	17,045.55	17,045.55	17045.55	178,691,892	178,691,892
Single Family Housing	65,439.66	65,439.66	65439.66	686,017,044	686,017,044
Strip Mall	9,217.60	9,217.60	9217.60	96,629,944	96,629,944
Total	119,943.01	119,943.01	119,943.01	1,257,386,612	1,257,386,612

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	28.80	28.80	28.80	100.00	0.00	0.00
General Office Building	28.80	28.80	28.80	0.00	100.00	0.00
Hotel	28.80	28.80	28.80	0.00	100.00	0.00
Racquet Club	28.80	28.80	28.80	0.00	100.00	0.00
Regional Shopping Center	28.80	28.80	28.80	0.00	100.00	0.00
Single Family Housing	28.80	28.80	28.80	100.00	0.00	0.00
Strip Mall	28.80	28.80	28.80	0.00	100.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	23,430.02	23,430.02	1.06	0.40	23,576.84
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	23,430.02	23,430.02	1.06	0.40	23,576.84
NaturalGas Mitigated	1.76	15.17	7.57	0.10		0.00	1.21		0.00	1.21	0.00	17,378.21	17,378.21	0.33	0.32	17,483.97
NaturalGas Unmitigated	1.76	15.17	7.57	0.10		0.00	1.21		0.00	1.21	0.00	17,378.21	17,378.21	0.33	0.32	17,483.97
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.86289e+007	0.15	1.40	1.18	0.01		0.00	0.11		0.00	0.11	0.00	1,527.75	1,527.75	0.03	0.03	1,537.04
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	2.38177e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	127.10	127.10	0.00	0.00	127.87
Single Family Housing	2.61449e+008	1.41	12.05	5.13	0.08		0.00	0.97		0.00	0.97	0.00	13,951.94	13,951.94	0.27	0.26	14,036.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.75**	**15.17**	**7.57**	**0.09**		**0.00**	**1.20**		**0.00**	**1.20**	**0.00**	**17,378.22**	**17,378.22**	**0.34**	**0.33**	**17,483.97**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.36478e+006	0.05	0.43	0.18	0.00		0.00	0.03		0.00	0.03	0.00	499.74	499.74	0.01	0.01	502.78
General Office Building	2.86289e+007	0.15	1.40	1.18	0.01		0.00	0.11		0.00	0.11	0.00	1,527.75	1,527.75	0.03	0.03	1,537.04
Hotel	1.6686e+007	0.09	0.82	0.69	0.00		0.00	0.06		0.00	0.06	0.00	890.43	890.43	0.02	0.02	895.85
Racquet Club	6.1845e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	330.03	330.03	0.01	0.01	332.04
Regional Shopping Center	2.38177e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	127.10	127.10	0.00	0.00	127.87
Single Family Housing	2.61449e+008	1.41	12.05	5.13	0.08		0.00	0.97		0.00	0.97	0.00	13,951.94	13,951.94	0.27	0.26	14,036.85
Strip Mall	960000	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	51.23	51.23	0.00	0.00	51.54
Total		**1.75**	**15.17**	**7.57**	**0.09**		**0.00**	**1.20**		**0.00**	**1.20**	**0.00**	**17,378.22**	**17,378.22**	**0.34**	**0.33**	**17,483.97**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.76569e+007					5,136.59	0.23	0.09	5,168.77
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	4.55315e+006					1,324.56	0.06	0.02	1,332.87
Single Family Housing	4.76133e+007					13,851.27	0.63	0.24	13,938.06
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**23,430.02**	**1.05**	**0.40**	**23,576.85**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.85997e+006					541.09	0.02	0.01	544.48
General Office Building	1.76569e+007					5,136.59	0.23	0.09	5,168.77
Hotel	6.0975e+006					1,773.83	0.08	0.03	1,784.95
Racquet Club	924000					268.80	0.01	0.00	270.49
Regional Shopping Center	4.55315e+006					1,324.56	0.06	0.02	1,332.87
Single Family Housing	4.76133e+007					13,851.27	0.63	0.24	13,938.06
Strip Mall	1.8352e+006					533.88	0.02	0.01	537.23
Total						**23,430.02**	**1.05**	**0.40**	**23,576.85**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	303.11	3.69	332.75	0.11		0.00	39.56		0.00	39.56	3,723.40	3,224.42	6,947.81	3.55	0.32	7,122.05

Unmitigated	303.11	3.69	332.75	0.11		0.00	39.56		0.00	39.56	3,723.40	3,224.42	6,947.81	3.55	0.32	7,122.05
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	13.96					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	61.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	226.40	3.07	278.67	0.11		0.00	39.26		0.00	39.26	3,723.40	3,135.63	6,859.03	3.46	0.32	7,031.49
Landscaping	1.62	0.62	54.08	0.00		0.00	0.30		0.00	0.30	0.00	88.79	88.79	0.08	0.00	90.56
Total	**303.11**	**3.69**	**332.75**	**0.11**		**0.00**	**39.56**		**0.00**	**39.56**	**3,723.40**	**3,224.42**	**6,947.82**	**3.54**	**0.32**	**7,122.05**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	13.96					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	61.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	226.40	3.07	278.67	0.11		0.00	39.26		0.00	39.26	3,723.40	3,135.63	6,859.03	3.46	0.32	7,031.49
Landscaping	1.62	0.62	54.08	0.00		0.00	0.30		0.00	0.30	0.00	88.79	88.79	0.08	0.00	90.56
Total	**303.11**	**3.69**	**332.75**	**0.11**		**0.00**	**39.56**		**0.00**	**39.56**	**3,723.40**	**3,224.42**	**6,947.82**	**3.54**	**0.32**	**7,122.05**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					1,833.69	10.79	0.66	2,265.98
Unmitigated					1,833.69	10.79	0.66	2,265.98
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	282.215 / 172.97					620.36	0.03	0.22	690.47
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	29.4038 / 18.0217					64.63	0.00	0.02	71.94
Single Family Housing	445.523 / 280.873					987.29	10.16	0.35	1,310.50
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,833.68**	**10.78**	**0.65**	**2,265.99**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	26.0616 / 16.4301					57.75	0.59	0.02	76.66
General Office Building	282.215 / 172.97					620.36	0.03	0.22	690.47
Hotel	19.0251 / 2.1139					32.10	0.00	0.01	36.77
Racquet Club	20.7001 / 12.6872					45.50	0.00	0.02	50.65
Regional Shopping Center	29.4038 / 18.0217					64.63	0.00	0.02	71.94
Single Family Housing	445.523 / 280.873					987.29	10.16	0.35	1,310.50
Strip Mall	11.8516 / 7.26389					26.05	0.00	0.01	29.00
Total						**1,833.68**	**10.78**	**0.65**	**2,265.99**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			

Mitigated					2,571.80	151.99	0.00	5,763.56
Unmitigated					2,571.80	151.99	0.00	5,763.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1476.7					299.76	17.72	0.00	671.77
Hotel	410.63					83.35	4.93	0.00	186.80
Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	416.81					84.61	5.00	0.00	189.61
Single Family Housing	8018.37					1,627.66	96.19	0.00	3,647.68
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,571.80**	**152.00**	**0.00**	**5,763.55**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	184					37.35	2.21	0.00	83.70
General Office Building	1476.7					299.76	17.72	0.00	671.77
Hotel	410.63					83.35	4.93	0.00	186.80

Racquet Club	1995					404.97	23.93	0.00	907.56
Regional Shopping Center	416.81					84.61	5.00	0.00	189.61
Single Family Housing	8018.37					1,627.66	96.19	0.00	3,647.68
Strip Mall	168					34.10	2.02	0.00	76.43
Total						**2,571.80**	**152.00**	**0.00**	**5,763.55**

9.0 Vegetation

CalEEMod Operation Emissions for the Kern County General Plan Buildout Alternative Mojave Desert Air Basin

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 3 Operation 2025

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	8.648	1000sqft
Single Family Housing	288	Dwelling Unit
Regional Shopping Center	2.162	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

Land Use Change -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	21.03	0.27	24.42	0.01		0.00	3.14		0.00	3.14	297.49	128.30	425.79	0.28	0.02	438.88
Energy	0.06	0.52	0.22	0.00		0.00	0.04		0.00	0.04	0.00	1,215.21	1,215.21	0.04	0.02	1,222.71
Mobile	2.22	12.19	18.74	0.04	3.10	0.25	3.35	0.06	0.23	0.29	0.00	3,422.83	3,422.83	0.11	0.00	3,425.19
Waste						0.00	0.00		0.00	0.00	70.67	0.00	70.67	4.18	0.00	158.38
Water						0.00	0.00		0.00	0.00	0.00	119.10	119.10	0.43	0.02	133.60
Total	**23.31**	**12.98**	**43.38**	**0.05**	**3.10**	**0.25**	**6.53**	**0.06**	**0.23**	**3.47**	**368.16**	**4,885.44**	**5,253.60**	**5.04**	**0.06**	**5,378.76**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	21.03	0.27	24.42	0.01		0.00	3.14		0.00	3.14	297.49	128.30	425.79	0.28	0.02	438.88
Energy	0.06	0.52	0.22	0.00		0.00	0.04		0.00	0.04	0.00	1,215.21	1,215.21	0.04	0.02	1,222.71
Mobile	2.22	12.19	18.74	0.04	3.10	0.25	3.35	0.06	0.23	0.29	0.00	3,422.83	3,422.83	0.11	0.00	3,425.19
Waste						0.00	0.00		0.00	0.00	70.67	0.00	70.67	4.18	0.00	158.38
Water						0.00	0.00		0.00	0.00	0.00	119.10	119.10	0.43	0.02	133.60
Total	**23.31**	**12.98**	**43.38**	**0.05**	**3.10**	**0.25**	**6.53**	**0.06**	**0.23**	**3.47**	**368.16**	**4,885.44**	**5,253.60**	**5.04**	**0.06**	**5,378.76**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.22	12.19	18.74	0.04	3.10	0.25	3.35	0.06	0.23	0.29	0.00	3,422.83	3,422.83	0.11	0.00	3,425.19
Unmitigated	2.22	12.19	18.74	0.04	3.10	0.25	3.35	0.06	0.23	0.29	0.00	3,422.83	3,422.83	0.11	0.00	3,425.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	95.21	95.21	95.21	183,688	183,688
Regional Shopping Center	92.84	92.84	92.84	179,100	179,100
Single Family Housing	2,756.16	2,756.16	2756.16	5,317,184	5,317,184
Total	2,944.21	2,944.21	2,944.21	5,679,971	5,679,971

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
General Office Building	5.30	5.30	5.30	0.00	100.00	0.00
Regional Shopping Center	5.30	5.30	5.30	0.00	100.00	0.00
Single Family Housing	5.30	5.30	5.30	100.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	618.57	618.57	0.03	0.01	622.45
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	618.57	618.57	0.03	0.01	622.45
NaturalGas Mitigated	0.06	0.52	0.22	0.00		0.00	0.04		0.00	0.04	0.00	596.63	596.63	0.01	0.01	600.27
NaturalGas Unmitigated	0.06	0.52	0.22	0.00		0.00	0.04		0.00	0.04	0.00	596.63	596.63	0.01	0.01	600.27

Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	155923	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.32	8.32	0.00	0.00	8.37
Regional Shopping Center	12972	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.69	0.69	0.00	0.00	0.70
Single Family Housing	1.10116e+007	0.06	0.51	0.22	0.00		0.00	0.04		0.00	0.04	0.00	587.62	587.62	0.01	0.01	591.20
Total		**0.06**	**0.52**	**0.23**	**0.00**		**0.00**	**0.04**		**0.00**	**0.04**	**0.00**	**596.63**	**596.63**	**0.01**	**0.01**	**600.27**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	155923	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.32	8.32	0.00	0.00	8.37
Regional Shopping Center	12972	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.69	0.69	0.00	0.00	0.70
Single Family Housing	1.10116e+007	0.06	0.51	0.22	0.00		0.00	0.04		0.00	0.04	0.00	587.62	587.62	0.01	0.01	591.20
Total		**0.06**	**0.52**	**0.23**	**0.00**		**0.00**	**0.04**		**0.00**	**0.04**	**0.00**	**596.63**	**596.63**	**0.01**	**0.01**	**600.27**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	kWh	tons/yr				MT/yr			
General Office Building	96165.8					27.98	0.00	0.00	28.15
Regional Shopping Center	24798.1					7.21	0.00	0.00	7.26
Single Family Housing	2.00536e+006					583.38	0.03	0.01	587.04
Total						**618.57**	**0.03**	**0.01**	**622.45**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	96165.8					27.98	0.00	0.00	28.15
Regional Shopping Center	24798.1					7.21	0.00	0.00	7.26
Single Family Housing	2.00536e+006					583.38	0.03	0.01	587.04
Total						**618.57**	**0.03**	**0.01**	**622.45**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	21.03	0.27	24.42	0.01		0.00	3.14		0.00	3.14	297.49	128.30	425.79	0.28	0.02	438.88
Unmitigated	21.03	0.27	24.42	0.01		0.00	3.14		0.00	3.14	297.49	128.30	425.79	0.28	0.02	438.88
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.82					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	18.07	0.25	22.26	0.01		0.00	3.13		0.00	3.13	297.49	124.76	422.26	0.27	0.02	435.27
Landscaping	0.06	0.02	2.16	0.00		0.00	0.01		0.00	0.01	0.00	3.53	3.53	0.00	0.00	3.60
Total	**21.02**	**0.27**	**24.42**	**0.01**		**0.00**	**3.14**		**0.00**	**3.14**	**297.49**	**128.29**	**425.79**	**0.27**	**0.02**	**438.87**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.82					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	18.07	0.25	22.26	0.01		0.00	3.13		0.00	3.13	297.49	124.76	422.26	0.27	0.02	435.27
Landscaping	0.06	0.02	2.16	0.00		0.00	0.01		0.00	0.01	0.00	3.53	3.53	0.00	0.00	3.60
Total	**21.02**	**0.27**	**24.42**	**0.01**		**0.00**	**3.14**		**0.00**	**3.14**	**297.49**	**128.29**	**425.79**	**0.27**	**0.02**	**438.87**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					119.10	0.43	0.02	133.60
Unmitigated					119.10	0.43	0.02	133.60
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	1.5374 / 0.942276					8.87	0.00	0.00	9.29
Regional Shopping Center	0.159997 / 0.0980625					0.92	0.00	0.00	0.97
Single Family Housing	18.7644 / 11.8297					109.31	0.43	0.02	123.35
Total						**119.10**	**0.43**	**0.02**	**133.61**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	1.5374 / 0.942276					8.87	0.00	0.00	9.29
Regional Shopping Center	0.159997 / 0.0980625					0.92	0.00	0.00	0.97
Single Family Housing	18.7644 / 11.8297					109.31	0.43	0.02	123.35
Total						**119.10**	**0.43**	**0.02**	**133.61**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					70.67	4.18	0.00	158.38
Unmitigated					70.67	4.18	0.00	158.38
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	8.04					1.63	0.10	0.00	3.66
Regional Shopping Center	2.27					0.46	0.03	0.00	1.03
Single Family Housing	337.84					68.58	4.05	0.00	153.69
Total						**70.67**	**4.18**	**0.00**	**158.38**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	8.04					1.63	0.10	0.00	3.66
Regional Shopping Center	2.27					0.46	0.03	0.00	1.03
Single Family Housing	337.84					68.58	4.05	0.00	153.69
Total						**70.67**	**4.18**	**0.00**	**158.38**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 4 Operation 2029

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	17.297	1000sqft
Single Family Housing	576	Dwelling Unit
Regional Shopping Center	4.324	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	42.05	0.54	48.83	0.02		0.00	6.28		0.00	6.28	594.98	256.59	851.58	0.56	0.05	877.76
Energy	0.12	1.03	0.45	0.01		0.00	0.08		0.00	0.08	0.00	2,430.42	2,430.42	0.08	0.04	2,445.43
Mobile	3.92	21.22	33.00	0.07	6.20	0.42	6.62	0.11	0.39	0.51	0.00	6,496.55	6,496.55	0.21	0.00	6,500.94
Waste						0.00	0.00		0.00	0.00	141.26	0.00	141.26	8.35	0.00	316.58
Water						0.00	0.00		0.00	0.00	0.00	238.21	238.21	0.86	0.04	267.20
Total	**46.09**	**22.79**	**82.28**	**0.10**	**6.20**	**0.42**	**12.98**	**0.11**	**0.39**	**6.87**	**736.24**	**9,421.77**	**10,158.02**	**10.06**	**0.13**	**10,407.91**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	42.05	0.54	48.83	0.02		0.00	6.28		0.00	6.28	594.98	256.59	851.58	0.56	0.05	877.76
Energy	0.12	1.03	0.45	0.01		0.00	0.08		0.00	0.08	0.00	2,430.42	2,430.42	0.08	0.04	2,445.43
Mobile	3.92	21.22	33.00	0.07	6.20	0.42	6.62	0.11	0.39	0.51	0.00	6,496.55	6,496.55	0.21	0.00	6,500.94
Waste						0.00	0.00		0.00	0.00	141.26	0.00	141.26	8.35	0.00	316.58
Water						0.00	0.00		0.00	0.00	0.00	238.21	238.21	0.86	0.04	267.20
Total	**46.09**	**22.79**	**82.28**	**0.10**	**6.20**	**0.42**	**12.98**	**0.11**	**0.39**	**6.87**	**736.24**	**9,421.77**	**10,158.02**	**10.06**	**0.13**	**10,407.91**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.92	21.22	33.00	0.07	6.20	0.42	6.62	0.11	0.39	0.51	0.00	6,496.55	6,496.55	0.21	0.00	6,500.94
Unmitigated	3.92	21.22	33.00	0.07	6.20	0.42	6.62	0.11	0.39	0.51	0.00	6,496.55	6,496.55	0.21	0.00	6,500.94
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	190.44	190.44	190.44	367,397	367,397
Regional Shopping Center	185.67	185.67	185.67	358,200	358,200
Single Family Housing	5,512.32	5,512.32	5512.32	10,634,368	10,634,368
Total	5,888.43	5,888.43	5,888.43	11,359,964	11,359,964

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
General Office Building	5.30	5.30	5.30	0.00	100.00	0.00
Regional Shopping Center	5.30	5.30	5.30	0.00	100.00	0.00
Single Family Housing	5.30	5.30	5.30	100.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	1,237.15	1,237.15	0.06	0.02	1,244.90
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	1,237.15	1,237.15	0.06	0.02	1,244.90
NaturalGas Mitigated	0.12	1.03	0.45	0.01		0.00	0.08		0.00	0.08	0.00	1,193.27	1,193.27	0.02	0.02	1,200.53
NaturalGas Unmitigated	0.12	1.03	0.45	0.01		0.00	0.08		0.00	0.08	0.00	1,193.27	1,193.27	0.02	0.02	1,200.53
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	311865	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	16.64	16.64	0.00	0.00	16.74
Regional Shopping Center	25944	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.38	1.38	0.00	0.00	1.39
Single Family Housing	2.20232e+007	0.12	1.01	0.43	0.01		0.00	0.08		0.00	0.08	0.00	1,175.24	1,175.24	0.02	0.02	1,182.40
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**	**0.00**	**1,193.26**	**1,193.26**	**0.02**	**0.02**	**1,200.53**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU	tons/yr										MT/yr					
General Office Building	311865	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	16.64	16.64	0.00	0.00	16.74
Regional Shopping Center	25944	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	1.38	1.38	0.00	0.00	1.39
Single Family Housing	2.20232e+007	0.12	1.01	0.43	0.01		0.00	0.08		0.00	0.08	0.00	1,175.24	1,175.24	0.02	0.02	1,182.40
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**	**0.00**	**1,193.26**	**1,193.26**	**0.02**	**0.02**	**1,200.53**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	192343					55.95	0.00	0.00	56.31
Regional Shopping Center	49596.3					14.43	0.00	0.00	14.52
Single Family Housing	4.01072e+006					1,166.76	0.05	0.02	1,174.07
Total						**1,237.14**	**0.05**	**0.02**	**1,244.90**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	192343					55.95	0.00	0.00	56.31
Regional Shopping Center	49596.3					14.43	0.00	0.00	14.52
Single Family Housing	4.01072e+006					1,166.76	0.05	0.02	1,174.07
Total						**1,237.14**	**0.05**	**0.02**	**1,244.90**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	42.05	0.54	48.83	0.02		0.00	6.28		0.00	6.28	594.98	256.59	851.58	0.56	0.05	877.76
Unmitigated	42.05	0.54	48.83	0.02		0.00	6.28		0.00	6.28	594.98	256.59	851.58	0.56	0.05	877.76
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	4.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	36.14	0.49	44.52	0.02		0.00	6.26		0.00	6.26	594.98	249.53	844.51	0.55	0.05	870.55
Landscaping	0.13	0.05	4.31	0.00		0.00	0.02		0.00	0.02	0.00	7.07	7.07	0.01	0.00	7.21
Total	**42.05**	**0.54**	**48.83**	**0.02**		**0.00**	**6.28**		**0.00**	**6.28**	**594.98**	**256.60**	**851.58**	**0.56**	**0.05**	**877.76**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.65					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	4.13					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	36.14	0.49	44.52	0.02		0.00	6.26		0.00	6.26	594.98	249.53	844.51	0.55	0.05	870.55
Landscaping	0.13	0.05	4.31	0.00		0.00	0.02		0.00	0.02	0.00	7.07	7.07	0.01	0.00	7.21
Total	**42.05**	**0.54**	**48.83**	**0.02**		**0.00**	**6.28**		**0.00**	**6.28**	**594.98**	**256.60**	**851.58**	**0.56**	**0.05**	**877.76**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					238.21	0.86	0.04	267.20
Unmitigated					238.21	0.86	0.04	267.20
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	3.07479 / 1.88455					17.74	0.00	0.00	18.57
Regional Shopping Center	0.319993 / 0.196125					1.85	0.00	0.00	1.93
Single Family Housing	37.5287 / 23.6594					218.63	0.86	0.03	246.70
Total						**238.22**	**0.86**	**0.03**	**267.20**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	3.07479 / 1.88455					17.74	0.00	0.00	18.57
Regional Shopping Center	0.319993 / 0.196125					1.85	0.00	0.00	1.93
Single Family Housing	37.5287 / 23.6594					218.63	0.86	0.03	246.70
Total						**238.22**	**0.86**	**0.03**	**267.20**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					141.26	8.35	0.00	316.58
Unmitigated					141.26	8.35	0.00	316.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	16.09					3.27	0.19	0.00	7.32
Regional Shopping Center	4.54					0.92	0.05	0.00	2.07
Single Family Housing	675.27					137.07	8.10	0.00	307.19
Total						**141.26**	**8.34**	**0.00**	**316.58**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	16.09					3.27	0.19	0.00	7.32
Regional Shopping Center	4.54					0.92	0.05	0.00	2.07
Single Family Housing	675.27					137.07	8.10	0.00	307.19

Total						**141.26**	**8.34**	**0.00**	**316.58**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern County General Plan Buildout Alternative Phase 5 Operation 2033

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	25.945	1000sqft
Single Family Housing	865	Dwelling Unit
Regional Shopping Center	6.486	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Area	63.15	0.81	73.34	0.03		0.00	9.43		0.00	9.43	893.51	385.33	1,278.84	0.83	0.07	1,318.16
Energy	0.18	1.55	0.67	0.01		0.00	0.13		0.00	0.13	0.00	3,649.69	3,649.69	0.12	0.06	3,672.24
Mobile	5.88	31.87	49.56	0.10	9.31	0.64	9.94	0.17	0.59	0.76	0.00	9,755.38	9,755.38	0.31	0.00	9,761.97
Waste						0.00	0.00		0.00	0.00	212.18	0.00	212.18	12.54	0.00	475.51
Water						0.00	0.00		0.00	0.00	0.00	357.70	357.70	1.30	0.05	401.24
Total	**69.21**	**34.23**	**123.57**	**0.14**	**9.31**	**0.64**	**19.50**	**0.17**	**0.59**	**10.32**	**1,105.69**	**14,148.10**	**15,253.79**	**15.10**	**0.18**	**15,629.12**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	63.15	0.81	73.34	0.03		0.00	9.43		0.00	9.43	893.51	385.33	1,278.84	0.83	0.07	1,318.16
Energy	0.18	1.55	0.67	0.01		0.00	0.13		0.00	0.13	0.00	3,649.69	3,649.69	0.12	0.06	3,672.24
Mobile	5.88	31.87	49.56	0.10	9.31	0.64	9.94	0.17	0.59	0.76	0.00	9,755.38	9,755.38	0.31	0.00	9,761.97
Waste						0.00	0.00		0.00	0.00	212.18	0.00	212.18	12.54	0.00	475.51
Water						0.00	0.00		0.00	0.00	0.00	357.70	357.70	1.30	0.05	401.24
Total	**69.21**	**34.23**	**123.57**	**0.14**	**9.31**	**0.64**	**19.50**	**0.17**	**0.59**	**10.32**	**1,105.69**	**14,148.10**	**15,253.79**	**15.10**	**0.18**	**15,629.12**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.88	31.87	49.56	0.10	9.31	0.64	9.94	0.17	0.59	0.76	0.00	9,755.38	9,755.38	0.31	0.00	9,761.97
Unmitigated	5.88	31.87	49.56	0.10	9.31	0.64	9.94	0.17	0.59	0.76	0.00	9,755.38	9,755.38	0.31	0.00	9,761.97
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	285.65	285.65	285.65	551,085	551,085
Regional Shopping Center	278.51	278.51	278.51	537,299	537,299
Single Family Housing	8,278.05	8,278.05	8278.05	15,970,014	15,970,014
Total	8,842.21	8,842.21	8,842.21	17,058,398	17,058,398

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
General Office Building	5.30	5.30	5.30	0.00	100.00	0.00
Regional Shopping Center	5.30	5.30	5.30	0.00	100.00	0.00
Single Family Housing	5.30	5.30	5.30	100.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	1,857.74	1,857.74	0.08	0.03	1,869.38
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	1,857.74	1,857.74	0.08	0.03	1,869.38
NaturalGas Mitigated	0.18	1.55	0.67	0.01		0.00	0.13		0.00	0.13	0.00	1,791.95	1,791.95	0.03	0.03	1,802.85
NaturalGas Unmitigated	0.18	1.55	0.67	0.01		0.00	0.13		0.00	0.13	0.00	1,791.95	1,791.95	0.03	0.03	1,802.85

Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	467788	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	24.96	24.96	0.00	0.00	25.11
Regional Shopping Center	38916	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.08	2.08	0.00	0.00	2.09
Single Family Housing	3.30731e+007	0.18	1.52	0.65	0.01		0.00	0.12		0.00	0.12	0.00	1,764.91	1,764.91	0.03	0.03	1,775.65
Total		**0.18**	**1.54**	**0.67**	**0.01**		**0.00**	**0.12**		**0.00**	**0.12**	**0.00**	**1,791.95**	**1,791.95**	**0.03**	**0.03**	**1,802.85**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	467788	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	24.96	24.96	0.00	0.00	25.11
Regional Shopping Center	38916	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.08	2.08	0.00	0.00	2.09
Single Family Housing	3.30731e+007	0.18	1.52	0.65	0.01		0.00	0.12		0.00	0.12	0.00	1,764.91	1,764.91	0.03	0.03	1,775.65
Total		**0.18**	**1.54**	**0.67**	**0.01**		**0.00**	**0.12**		**0.00**	**0.12**	**0.00**	**1,791.95**	**1,791.95**	**0.03**	**0.03**	**1,802.85**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	kWh	tons/yr				MT/yr			
General Office Building	288508					83.93	0.00	0.00	84.46
Regional Shopping Center	74394.4					21.64	0.00	0.00	21.78
Single Family Housing	6.02304e+006					1,752.17	0.08	0.03	1,763.15
Total						**1,857.74**	**0.08**	**0.03**	**1,869.39**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	288508					83.93	0.00	0.00	84.46
Regional Shopping Center	74394.4					21.64	0.00	0.00	21.78
Single Family Housing	6.02304e+006					1,752.17	0.08	0.03	1,763.15
Total						**1,857.74**	**0.08**	**0.03**	**1,869.39**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	63.15	0.81	73.34	0.03		0.00	9.43		0.00	9.43	893.51	385.33	1,278.84	0.83	0.07	1,318.16
Unmitigated	63.15	0.81	73.34	0.03		0.00	9.43		0.00	9.43	893.51	385.33	1,278.84	0.83	0.07	1,318.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.47					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	6.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	54.28	0.74	66.86	0.03		0.00	9.39		0.00	9.39	893.51	374.72	1,268.23	0.82	0.07	1,307.34
Landscaping	0.19	0.07	6.47	0.00		0.00	0.04		0.00	0.04	0.00	10.61	10.61	0.01	0.00	10.82
Total	**63.15**	**0.81**	**73.33**	**0.03**		**0.00**	**9.43**		**0.00**	**9.43**	**893.51**	**385.33**	**1,278.84**	**0.83**	**0.07**	**1,318.16**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.47					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	6.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	54.28	0.74	66.86	0.03		0.00	9.39		0.00	9.39	893.51	374.72	1,268.23	0.82	0.07	1,307.34
Landscaping	0.19	0.07	6.47	0.00		0.00	0.04		0.00	0.04	0.00	10.61	10.61	0.01	0.00	10.82
Total	**63.15**	**0.81**	**73.33**	**0.03**		**0.00**	**9.43**		**0.00**	**9.43**	**893.51**	**385.33**	**1,278.84**	**0.83**	**0.07**	**1,318.16**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					357.70	1.30	0.05	401.24
Unmitigated					357.70	1.30	0.05	401.24
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	4.61219 / 2.82683					26.61	0.00	0.00	27.86
Regional Shopping Center	0.480731 / 0.294641					2.77	0.00	0.00	2.90
Single Family Housing	56.3582 / 35.5302					328.32	1.29	0.05	370.48
Total						**357.70**	**1.29**	**0.05**	**401.24**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	4.61219 / 2.82683					26.61	0.00	0.00	27.86
Regional Shopping Center	0.480731 / 0.294641					2.77	0.00	0.00	2.90
Single Family Housing	56.3582 / 35.5302					328.32	1.29	0.05	370.48
Total						**357.70**	**1.29**	**0.05**	**401.24**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					212.18	12.54	0.00	475.51
Unmitigated					212.18	12.54	0.00	475.51
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	24.13					4.90	0.29	0.00	10.98
Regional Shopping Center	6.81					1.38	0.08	0.00	3.10
Single Family Housing	1014.34					205.90	12.17	0.00	461.44
Total						**212.18**	**12.54**	**0.00**	**475.52**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	24.13					4.90	0.29	0.00	10.98
Regional Shopping Center	6.81					1.38	0.08	0.00	3.10
Single Family Housing	1014.34					205.90	12.17	0.00	461.44
Total						**212.18**	**12.54**	**0.00**	**475.52**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 6 Operation 2037

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	34.594	1000sqft
Single Family Housing	1153	Dwelling Unit
Regional Shopping Center	8.648	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	84.17	1.08	97.75	0.04		0.00	12.57		0.00	12.57	1,191.00	513.63	1,704.63	1.11	0.09	1,757.04
Energy	0.24	2.06	0.89	0.01		0.00	0.17		0.00	0.17	0.00	4,864.90	4,864.90	0.16	0.09	4,894.95
Mobile	7.31	39.20	61.60	0.14	12.40	0.77	13.17	0.23	0.71	0.94	0.00	12,612.70	12,612.70	0.40	0.00	12,621.03
Waste						0.00	0.00		0.00	0.00	282.85	0.00	282.85	16.72	0.00	633.89
Water						0.00	0.00		0.00	0.00	0.00	476.79	476.79	1.73	0.07	534.83
Total	**91.72**	**42.34**	**160.24**	**0.19**	**12.40**	**0.77**	**25.91**	**0.23**	**0.71**	**13.68**	**1,473.85**	**18,468.02**	**19,941.87**	**20.12**	**0.25**	**20,441.74**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	84.17	1.08	97.75	0.04		0.00	12.57		0.00	12.57	1,191.00	513.63	1,704.63	1.11	0.09	1,757.04
Energy	0.24	2.06	0.89	0.01		0.00	0.17		0.00	0.17	0.00	4,864.90	4,864.90	0.16	0.09	4,894.95
Mobile	7.31	39.20	61.60	0.14	12.40	0.77	13.17	0.23	0.71	0.94	0.00	12,612.70	12,612.70	0.40	0.00	12,621.03
Waste						0.00	0.00		0.00	0.00	282.85	0.00	282.85	16.72	0.00	633.89
Water						0.00	0.00		0.00	0.00	0.00	476.79	476.79	1.73	0.07	534.83
Total	**91.72**	**42.34**	**160.24**	**0.19**	**12.40**	**0.77**	**25.91**	**0.23**	**0.71**	**13.68**	**1,473.85**	**18,468.02**	**19,941.87**	**20.12**	**0.25**	**20,441.74**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.31	39.20	61.60	0.14	12.40	0.77	13.17	0.23	0.71	0.94	0.00	12,612.70	12,612.70	0.40	0.00	12,621.03
Unmitigated	7.31	39.20	61.60	0.14	12.40	0.77	13.17	0.23	0.71	0.94	0.00	12,612.70	12,612.70	0.40	0.00	12,621.03
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	380.88	380.88	380.88	734,794	734,794
Regional Shopping Center	371.35	371.35	371.35	716,399	716,399
Single Family Housing	11,034.21	11,034.21	11034.21	21,287,198	21,287,198
Total	11,786.44	11,786.44	11,786.44	22,738,391	22,738,391

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
General Office Building	5.30	5.30	5.30	0.00	100.00	0.00
Regional Shopping Center	5.30	5.30	5.30	0.00	100.00	0.00
Single Family Housing	5.30	5.30	5.30	100.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,476.32	2,476.32	0.11	0.04	2,491.84
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,476.32	2,476.32	0.11	0.04	2,491.84
NaturalGas Mitigated	0.24	2.06	0.89	0.01		0.00	0.17		0.00	0.17	0.00	2,388.58	2,388.58	0.05	0.04	2,403.12
NaturalGas Unmitigated	0.24	2.06	0.89	0.01		0.00	0.17		0.00	0.17	0.00	2,388.58	2,388.58	0.05	0.04	2,403.12

Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	623730	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.49
Regional Shopping Center	51888	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.77	2.77	0.00	0.00	2.79
Single Family Housing	4.40847e+007	0.24	2.03	0.86	0.01		0.00	0.16		0.00	0.16	0.00	2,352.53	2,352.53	0.05	0.04	2,366.84
Total		**0.24**	**2.06**	**0.89**	**0.01**		**0.00**	**0.16**		**0.00**	**0.16**	**0.00**	**2,388.58**	**2,388.58**	**0.05**	**0.04**	**2,403.12**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	623730	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	33.28	33.28	0.00	0.00	33.49
Regional Shopping Center	51888	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.77	2.77	0.00	0.00	2.79
Single Family Housing	4.40847e+007	0.24	2.03	0.86	0.01		0.00	0.16		0.00	0.16	0.00	2,352.53	2,352.53	0.05	0.04	2,366.84
Total		**0.24**	**2.06**	**0.89**	**0.01**		**0.00**	**0.16**		**0.00**	**0.16**	**0.00**	**2,388.58**	**2,388.58**	**0.05**	**0.04**	**2,403.12**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	kWh	tons/yr				MT/yr			
General Office Building	384685					111.91	0.01	0.00	112.61
Regional Shopping Center	99192.6					28.86	0.00	0.00	29.04
Single Family Housing	8.0284e+006					2,335.55	0.11	0.04	2,350.19
Total						**2,476.32**	**0.12**	**0.04**	**2,491.84**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	384685					111.91	0.01	0.00	112.61
Regional Shopping Center	99192.6					28.86	0.00	0.00	29.04
Single Family Housing	8.0284e+006					2,335.55	0.11	0.04	2,350.19
Total						**2,476.32**	**0.12**	**0.04**	**2,491.84**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	84.17	1.08	97.75	0.04		0.00	12.57		0.00	12.57	1,191.00	513.63	1,704.63	1.11	0.09	1,757.04
Unmitigated	84.17	1.08	97.75	0.04		0.00	12.57		0.00	12.57	1,191.00	513.63	1,704.63	1.11	0.09	1,757.04
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.29					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	8.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	72.35	0.98	89.12	0.03		0.00	12.52		0.00	12.52	1,191.00	499.49	1,690.49	1.10	0.09	1,742.61
Landscaping	0.26	0.10	8.62	0.00		0.00	0.05		0.00	0.05	0.00	14.14	14.14	0.01	0.00	14.43
Total	**84.17**	**1.08**	**97.74**	**0.03**		**0.00**	**12.57**		**0.00**	**12.57**	**1,191.00**	**513.63**	**1,704.63**	**1.11**	**0.09**	**1,757.04**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.29					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	8.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	72.35	0.98	89.12	0.03		0.00	12.52		0.00	12.52	1,191.00	499.49	1,690.49	1.10	0.09	1,742.61
Landscaping	0.26	0.10	8.62	0.00		0.00	0.05		0.00	0.05	0.00	14.14	14.14	0.01	0.00	14.43
Total	**84.17**	**1.08**	**97.74**	**0.03**		**0.00**	**12.57**		**0.00**	**12.57**	**1,191.00**	**513.63**	**1,704.63**	**1.11**	**0.09**	**1,757.04**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					476.79	1.73	0.07	534.83
Unmitigated					476.79	1.73	0.07	534.83
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	6.14781 / 3.76801					35.47	0.00	0.01	37.13
Regional Shopping Center	0.640727 / 0.392704					3.70	0.00	0.00	3.87
Single Family Housing	75.1226 / 47.3599					437.63	1.73	0.06	493.83
Total						**476.80**	**1.73**	**0.07**	**534.83**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	6.14781 / 3.76801					35.47	0.00	0.01	37.13
Regional Shopping Center	0.640727 / 0.392704					3.70	0.00	0.00	3.87
Single Family Housing	75.1226 / 47.3599					437.63	1.73	0.06	493.83
Total						**476.80**	**1.73**	**0.07**	**534.83**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					282.85	16.72	0.00	633.89
Unmitigated					282.85	16.72	0.00	633.89
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	32.17					6.53	0.39	0.00	14.63
Regional Shopping Center	9.08					1.84	0.11	0.00	4.13
Single Family Housing	1352.18					274.48	16.22	0.00	615.13
Total						**282.85**	**16.72**	**0.00**	**633.89**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	32.17					6.53	0.39	0.00	14.63
Regional Shopping Center	9.08					1.84	0.11	0.00	4.13
Single Family Housing	1352.18					274.48	16.22	0.00	615.13
Total						**282.85**	**16.72**	**0.00**	**633.89**

9.0 Vegetation

Tehachapi Upland MSHCP

Kern-Mojave Desert County, Annual

Kern County General Plan Buildout Alternative Phase 7 Operation 2041

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	43.242	1000sqft
Single Family Housing	1441	Dwelling Unit
Regional Shopping Center	10.811	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Pacific Gas & Electric Company
Climate Zone	7		2.7		
		Precipitation Freq (Days)			
			32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Modified

Construction Phase - Modified

Off-road Equipment -

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Vehicle Trips - Modified

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Modified

Energy Use - Modified

Water And Wastewater - Modified

Solid Waste - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	105.20	1.35	122.15	0.04		0.00	15.71		0.00	15.71	1,488.49	641.93	2,130.42	1.39	0.12	2,195.91
Energy	0.30	2.58	1.12	0.02		0.00	0.21		0.00	0.21	0.00	6,080.11	6,080.11	0.20	0.11	6,117.67
Mobile	8.64	46.12	73.98	0.17	15.49	0.93	16.42	0.28	0.86	1.14	0.00	15,390.00	15,390.00	0.48	0.00	15,400.11
Waste						0.00	0.00		0.00	0.00	353.44	0.00	353.44	20.89	0.00	792.09
Water						0.00	0.00		0.00	0.00	0.00	595.90	595.90	2.16	0.09	668.43
Total	**114.14**	**50.05**	**197.25**	**0.23**	**15.49**	**0.93**	**32.34**	**0.28**	**0.86**	**17.06**	**1,841.93**	**22,707.94**	**24,549.87**	**25.12**	**0.32**	**25,174.21**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	105.20	1.35	122.15	0.04		0.00	15.71		0.00	15.71	1,488.49	641.93	2,130.42	1.39	0.12	2,195.91
Energy	0.30	2.58	1.12	0.02		0.00	0.21		0.00	0.21	0.00	6,080.11	6,080.11	0.20	0.11	6,117.67
Mobile	8.64	46.12	73.98	0.17	15.49	0.93	16.42	0.28	0.86	1.14	0.00	15,390.00	15,390.00	0.48	0.00	15,400.11
Waste						0.00	0.00		0.00	0.00	353.44	0.00	353.44	20.89	0.00	792.09
Water						0.00	0.00		0.00	0.00	0.00	595.90	595.90	2.16	0.09	668.43
Total	**114.14**	**50.05**	**197.25**	**0.23**	**15.49**	**0.93**	**32.34**	**0.28**	**0.86**	**17.06**	**1,841.93**	**22,707.94**	**24,549.87**	**25.12**	**0.32**	**25,174.21**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.64	46.12	73.98	0.17	15.49	0.93	16.42	0.28	0.86	1.14	0.00	15,390.00	15,390.00	0.48	0.00	15,400.11
Unmitigated	8.64	46.12	73.98	0.17	15.49	0.93	16.42	0.28	0.86	1.14	0.00	15,390.00	15,390.00	0.48	0.00	15,400.11
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	476.09	476.09	476.09	918,481	918,481
Regional Shopping Center	464.22	464.22	464.22	895,582	895,582
Single Family Housing	13,790.37	13,790.37	13790.37	26,604,382	26,604,382
Total	14,730.69	14,730.69	14,730.69	28,418,445	28,418,445

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
General Office Building	5.30	5.30	5.30	0.00	100.00	0.00
Regional Shopping Center	5.30	5.30	5.30	0.00	100.00	0.00
Single Family Housing	5.30	5.30	5.30	100.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	3,094.89	3,094.89	0.14	0.05	3,114.29
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	3,094.89	3,094.89	0.14	0.05	3,114.29
NaturalGas Mitigated	0.30	2.58	1.12	0.02		0.00	0.21		0.00	0.21	0.00	2,985.22	2,985.22	0.06	0.05	3,003.38
NaturalGas Unmitigated	0.30	2.58	1.12	0.02		0.00	0.21		0.00	0.21	0.00	2,985.22	2,985.22	0.06	0.05	3,003.38

Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	779653	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	41.61	41.61	0.00	0.00	41.86
Regional Shopping Center	64866	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	3.46	3.46	0.00	0.00	3.48
Single Family Housing	5.50963e+007	0.30	2.54	1.08	0.02		0.00	0.21		0.00	0.21	0.00	2,940.15	2,940.15	0.06	0.05	2,958.04
Total		**0.30**	**2.58**	**1.11**	**0.02**		**0.00**	**0.21**		**0.00**	**0.21**	**0.00**	**2,985.22**	**2,985.22**	**0.06**	**0.05**	**3,003.38**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
General Office Building	779653	0.00	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	41.61	41.61	0.00	0.00	41.86
Regional Shopping Center	64866	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	3.46	3.46	0.00	0.00	3.48
Single Family Housing	5.50963e+007	0.30	2.54	1.08	0.02		0.00	0.21		0.00	0.21	0.00	2,940.15	2,940.15	0.06	0.05	2,958.04
Total		**0.30**	**2.58**	**1.11**	**0.02**		**0.00**	**0.21**		**0.00**	**0.21**	**0.00**	**2,985.22**	**2,985.22**	**0.06**	**0.05**	**3,003.38**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	kWh	tons/yr				MT/yr			
General Office Building	480851					139.89	0.01	0.00	140.76
Regional Shopping Center	124002					36.07	0.00	0.00	36.30
Single Family Housing	1.00338e+007					2,918.93	0.13	0.05	2,937.23
Total						**3,094.89**	**0.14**	**0.05**	**3,114.29**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
General Office Building	480851					139.89	0.01	0.00	140.76
Regional Shopping Center	124002					36.07	0.00	0.00	36.30
Single Family Housing	1.00338e+007					2,918.93	0.13	0.05	2,937.23
Total						**3,094.89**	**0.14**	**0.05**	**3,114.29**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	105.20	1.35	122.15	0.04		0.00	15.71		0.00	15.71	1,488.49	641.93	2,130.42	1.39	0.12	2,195.91
Unmitigated	105.20	1.35	122.15	0.04		0.00	15.71		0.00	15.71	1,488.49	641.93	2,130.42	1.39	0.12	2,195.91
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.12					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	10.34					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	90.42	1.23	111.38	0.04		0.00	15.65		0.00	15.65	1,488.49	624.25	2,112.74	1.37	0.12	2,177.89
Landscaping	0.32	0.12	10.77	0.00		0.00	0.06		0.00	0.06	0.00	17.68	17.68	0.02	0.00	18.03
Total	**105.20**	**1.35**	**122.15**	**0.04**		**0.00**	**15.71**		**0.00**	**15.71**	**1,488.49**	**641.93**	**2,130.42**	**1.39**	**0.12**	**2,195.92**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.12					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	10.34					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	90.42	1.23	111.38	0.04		0.00	15.65		0.00	15.65	1,488.49	624.25	2,112.74	1.37	0.12	2,177.89
Landscaping	0.32	0.12	10.77	0.00		0.00	0.06		0.00	0.06	0.00	17.68	17.68	0.02	0.00	18.03
Total	**105.20**	**1.35**	**122.15**	**0.04**		**0.00**	**15.71**		**0.00**	**15.71**	**1,488.49**	**641.93**	**2,130.42**	**1.39**	**0.12**	**2,195.92**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					595.90	2.16	0.09	668.43
Unmitigated					595.90	2.16	0.09	668.43
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	7.68521 / 4.71029					44.34	0.00	0.01	46.42
Regional Shopping Center	0.800724 / 0.490766					4.62	0.00	0.00	4.84
Single Family Housing	93.887 / 59.1896					546.94	2.16	0.08	617.18
Total						**595.90**	**2.16**	**0.09**	**668.44**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
General Office Building	7.68521 / 4.71029					44.34	0.00	0.01	46.42
Regional Shopping Center	0.800724 / 0.490766					4.62	0.00	0.00	4.84
Single Family Housing	93.887 / 59.1896					546.94	2.16	0.08	617.18
Total						**595.90**	**2.16**	**0.09**	**668.44**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					353.44	20.89	0.00	792.09
Unmitigated					353.44	20.89	0.00	792.09
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	40.21					8.16	0.48	0.00	18.29
Regional Shopping Center	11.35					2.30	0.14	0.00	5.16
Single Family Housing	1689.61					342.98	20.27	0.00	768.63
Total						**353.44**	**20.89**	**0.00**	**792.08**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
General Office Building	40.21					8.16	0.48	0.00	18.29
Regional Shopping Center	11.35					2.30	0.14	0.00	5.16
Single Family Housing	1689.61					342.98	20.27	0.00	768.63
Total						**353.44**	**20.89**	**0.00**	**792.08**

9.0 Vegetation

CalEEMod Vegetation Emissions

Estimate of Carbon Dioxide Factors for CalEEMod Sequestered Carbon Calculation

	COLE Type	Total Non-Soil (metric tons/hectare)	Soil (metric tons/hectare)	Total Carbon (metric tons/hectare)	Total Non-Soil Carbon (metric tons/acre)	Proportion in Covered Lands	Weighted Carbon (metric tons/acre)	Atmospheric Carbon/acre (CO2)
Black Oak Savannah	same as California Black Oak, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	78.3	27.6	105.9	31.7	0.09%	0.0	
Blue Oak Savannah	same as Blue Oak Woodland, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	18.8	27.6	46.4	7.6	15.44%	1.2	
Canyon Oak Savannah	same as Canyon Live Oak, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	65.1	27.6	92.7	26.3	1.30%	0.3	
Gray Pine Savannah	same as Gray Pine, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	5.9	27.6	33.5	2.4	0.19%	0.0	
Interior Oak Savannah	same as Interior Live Oak, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	28.1	27.6	55.7	11.4	0.83%	0.1	
Mixed Oak Savannah	same as Mixed Oak Woodland, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	46	27.6	73.6	18.6	36.22%	6.7	
Oak Savannah	same as Oak Woodland, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	46	27.6	73.6	18.6	16.92%	3.1	
Undetermined Savannah	same as Undetermined Woodland, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	46	27.6	73.6	18.6	2.05%	0.4	
White Oak Savannah	same as White Oak Woodland, excludes understory, down dead wood, and forest floor values (assumes grassland beneath)	39.6	27.6	67.2	16.0	26.95%	4.3	
					151.3	**100.00%**	**16.2**	**59.5**
Black Oak Woodland	California Black Oak	136.9	27.6	164.5	55.4	5.54%	3.1	
Blue Oak Woodland	Blue Oak	55.3	27.6	82.9	22.4	18.65%	4.2	
Calif. Buckeye Woodland	Other Hardwoods	53.2	25.6	78.8	21.5	0.69%	0.1	
Canyon Oak Woodland	Canyon Live Oak	93.7	27.6	121.3	37.9	12.71%	4.8	
Gray Pine Woodland	Gray Pine	38.7	27.6	66.3	15.7	0.22%	0.0	
Interior Live Oak Woodland	Interior Live Oak	86.3	27.6	113.9	34.9	1.56%	0.5	
Mixed Oak Woodland	Average of Calif. Black Oak, Blue Oak, Canyon Live Oak, Interior Live Oak, and Calif. White Oak	90.12	27.6	117.72	36.5	57.63%	21.0	
Oak Woodland	same as Mixed Oak Woodland	90.12	27.6	117.72	36.5	0.30%	0.1	
Pinyon Pine Woodland	Pinyon/Juniper Woodland	55.4	26.9	82.3	22.4	0.58%	0.1	
Undetermined Woodland	same as Mixed Oak Woodland	90.12	27.6	117.72	36.5	0.31%	0.1	
White Oak Woodland	California White Oak	78.4	27.6	106	31.7	1.79%	0.6	
					351.4	**100.00%**	**34.7**	**127.4**
Conifer/Mixed Oak	Average of Calif. Mixed Conifer and Mixed Oak Woodland	82.5	36.6	119.06	33.4	23.05%	7.7	
Incense Cedar	same as Calif. Mixed Conifer	74.8	45.6	120.4	30.3	0.10%	0.0	
Intermixed Conifer	Calif. Mixed Conifer	74.8	45.6	120.4	30.3	26.77%	8.1	
White Fir Stand	White Fir	188.3	51.9	240.2	76.2	8.09%	6.2	
White Fir/Mixed Oak	Average of White Fir and Mixed Oak Woodland	139.2	39.75	178.96	56.3	41.99%	23.7	
					226.5	**100.00%**	**45.6**	**167.4**

COLE analysis includes evaluation of forest types within an 50km range, centered on Tejon Ranch

Tehachapi Upland MSHCP SDEIS
Proposed TU MSHCP and Condor HCP Alternatives

Vegetation Type	CalEEMod Category	MT CO2/acre	"Initial" Vegetation in Covered Lands (acres)	Open Space (acres)	Undisturbed/Other (acres)	Development (acres)	Disturbed Area (acres)	Percent Affected (%)	Area Affected (acres)	"Final" Area Remaining (acres)
Scrubs	Forest/Scrub	default - scrub	7,841	7,515	0	326	207	75%	155	7,686
Chaparrals	Forest/Scrub	default - scrub	14,415	13,599	2	814	516	75%	387	14,028
Grasslands	Grassland	default - grassland	24,944	22,406	53	2,485	1,574	75%	1,181	23,763
Savannahs	Forest/Trees	59.5	33,120	31,036	38	2,046	1,296	20%	259	32,861
Woodlands	Forest/Trees	127.4	48,736	46,040	53	2,643	1,675	70%	1,172	47,564
Forests	Forest/Trees	167.4	3,956	3,883	0	73	46	70%	32	3,924
Riparian/Wetlands	Wetland	default - wetland	703	589	85	29	18	10%	2	701
Riparian Woodlands	Wetland	not applicable	59	54	4	1	1	0%	0	59
Wash	Not Applicable	not applicable	863	861	1	1	1	0%	0	863
Agriculture	Cropland	default - cropland	232	5	0	227	144	100%	144	88
Developed	Not Applicable	not applicable	127	38	1	88	56	0%	0	127
Total			134,996	126,026	237	8,733	5,533		3,332	131,664
Acres Disturbed										

Disturbed Area	5,533	acres
Development	8,733	acres
Percent of Developmen	63%	

Initial/Final are values to be entered in CalEEMod.
Default MT CO2/acre are the values in CalEEMod.

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Proposed MSHCP Alternative

9.0 Vegetation

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons				MT			
Unmitigated					-189,644.61	0.00	0.00	-189,644.61
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

9.1 Vegetation Land Change

Vegetation Type

	Initial/Final	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	Acres	tons				MT			
Cropland	232 / 88					-892.80	0.00	0.00	-892.80
Trees	33120 / 32763					-21,241.50	0.00	0.00	-21,241.50
Trees	3956 / 3924					-5,356.80	0.00	0.00	-5,356.80
Trees	48736 / 47564					-149,312.80	0.00	0.00	-149,312.80
Scrub	7841 / 7686					-2,216.50	0.00	0.00	-2,216.50
Grassland	24944 / 23763					-5,090.11	0.00	0.00	-5,090.11
Scrub	14415 / 14028					-5,534.10	0.00	0.00	-5,534.10
Wetlands	703 / 701					0.00	0.00	0.00	0.00
Total						**-189,644.61**	**0.00**	**0.00**	**-189,644.61**

Tehachapi Upland MSHCP SDEIS
Kern County General Plan Alternative

Vegetation Type	CalEEMod Category	MT CO2/acre	"Initial" Vegetation in Covered Lands (acres)	Open Space (acres)	Undisturbed/Other (acres)	Development (acres)	Disturbed Area (acres)	Percent Affected (%)	Area Affected (acres)	"Final" Area Remaining (acres)
Scrubs	Forest/Scrub	default - scrub	7,841	4,120	3,310	411	337	75%	252	7,589
Chaparrals	Forest/Scrub	default - scrub	14,415	3,320	9,891	1,204	986	75%	739	13,676
Grasslands	Grassland	default - grassland	24,944	8,633	12,913	3,398	2,782	75%	2,087	22,857
Savannahs	Forest/Trees	59.5	33,120	5,207	23,423	4,490	3,677	20%	735	32,385
Woodlands	Forest/Trees	127.4	48,736	9,835	34,129	4,772	3,908	70%	2,735	46,001
Forests	Forest/Trees	167.4	3,956	249	3,502	205	168	70%	118	3,838
Riparian/Wetlands	Wetland	default - wetland	703	589	85	29	24	10%	2	701
Riparian Woodlands	Wetland	not applicable	59	54	4	1	1	0%	0	59
Wash	Not Applicable	not applicable	863	455	405	3	2	0%	0	863
Agriculture	Cropland	default - cropland	232	5	0	227	186	100%	186	46
Developed	Not Applicable	not applicable	127	38	1	88	72	0%	0	127
Total			134,996	32,505	87,663	14,828	12,142		6,855	128,141
Acres Disturbed										

Disturbed Area	12,142	acres
Development	14,828	acres
Percent of Developmen	82%	

Initial/Final are values to be entered in CalEEMod.
Default MT CO2/acre are the values in CalEEMod.

Tehachapi Upland MSHCP

Kern-San Joaquin County, Annual

Kern County General Plan Buildout Alternative

9.0 Vegetation

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons				MT			
Unmitigated					-436,244.17	0.00	0.00	-436,244.17
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

9.1 Vegetation Land Change

Vegetation Type

	Initial/Final	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	Acres	tons				MT			
Trees	33120 / 32385					-43,732.50	0.00	0.00	-43,732.50
Trees	3956 / 3838					-19,753.20	0.00	0.00	-19,753.20
Trees	48736 / 46001					-348,439.00	0.00	0.00	-348,439.00
Cropland	232 / 46					-1,153.20	0.00	0.00	-1,153.20
Grassland	24944 / 22857					-8,994.97	0.00	0.00	-8,994.97
Scrub	14415 / 13676					-10,567.70	0.00	0.00	-10,567.70
Scrub	7841 / 7589					-3,603.60	0.00	0.00	-3,603.60
Wetlands	703 / 701					0.00	0.00	0.00	0.00
Total						**-436,244.17**	**0.00**	**0.00**	**-436,244.17**

Appendix G

Screening Level Health Risk Assessment for the TU MSHCP

SCREENING LEVEL
HEALTH RISK ASSESSMENT
FOR THE
TEHACHAPI UPLAND MULTIPLE SPECIES
HABITATCONSERVATION PLAN

Prepared by:

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JUNE 2011

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1.0 INTRODUCTION

1.1 Background/Methodology

This screening level health risk assessment (HRA) was prepared to estimate the potential cancer risks associated with diesel particulate matter (DPM) emissions resulting from off-road equipment that would be used during construction of residential and commercial development under the Proposed Tehachapi Upland Multiple Species Habitat Conservation Plan (Proposed TU MSHCP) Alternative. Due to the uncertainty of the location of actual construction, the associated DPM emissions, and the location of potential receptors, it is not possible to determine exactly where future receptors (either residences or workplaces) would be located at any given time over the course of construction. As a result, a scenario was developed to estimate the cancer risks to potential sensitive receptors resulting from ongoing construction activities in their general vicinity. In this scenario, a 5-acre construction site was selected to represent a reasonable simulation of the average acreage in which construction activity (e.g., grading, building construction) would occur over an extended period. The purpose of the analysis is to determine whether sensitive receptors in the vicinity of the simulated construction site would be exposed to a cancer risk of greater than 10 in one million,[1] and if they would be exposed to this level of risk, to determine an allowable proximity of future construction activity to sensitive receptors to avoid significant health impacts.

[1] This analysis looks to the San Joaquin Valley Air Pollution Control District (SJVAPCD) guidance, which provides that cancer risks are significant if the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million. Although these significance thresholds were developed by the air districts for use by state and local agencies in the CEQA process - rather than Federal agencies in the NEPA process - they represent the expert opinions of the relevant air districts regarding levels at which emissions of certain air pollutants represent significant impacts.

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2.0 SOURCES AND RECEPTORS

2.1 Construction Phase Emissions of TACs

During the construction phase of any development, DPM will be temporarily generated from equipment exhaust. For this analysis, Dudek has assumed that DPM consists of particulate matter with an aerodynamic diameter less than or equal to 10 micrometers. No other significant toxic air contaminant (TAC) emissions would be associated with construction.

As indicated in the Section 4.3 of the *Tehachapi Upland Multi-Species Habitat Conservation Plan Supplemental Draft Environmental Impact Statement* (SDEIS), construction activities associated with residential and commercial development under the Proposed TU MSHCP Alternative were divided into seven 4-year phases over a 28-year construction period. Additional details regarding the calculation of construction emissions and the estimated emissions can be found in Section 4.3 and Appendix F of the SDEIS.

The area in which construction would occur will vary depending on the type and magnitude of the activity (e.g., grading, building construction). It is unlikely that construction equipment would be presented near potential receptors for an extended period of time. That is, the construction equipment would move throughout a larger construction area. For purposes of this analysis, it was assumed that construction activity could exist within a 5-acre area near receptors during a 4-year phase. While the area may be larger or smaller, this area is believed to represent a reasonable simulation of possible construction activity for the purpose of this screening level HRA.

Construction-related emissions of DPM would vary substantially, depending on the level of activity, length of construction period, specific construction operations, and types of equipment. The maximum DPM emissions from off-road diesel equipment[2] would occur during the first 4-year phase of construction (2013-2016). Over the course of this phase, off-road equipment exhaust emissions of DPM would total 4.57 tons distributed over a 903-acre Phase 1 site (refer to Section 4.3 and Appendix F of the SDEIS). This is equivalent to an emission rate of approximately 1.44 $x10^{-3}$ pounds per hour distributed over the simulated 5-acre site used for the purposes of this analysis as shown in the following calculation:

[2] While DPM emissions would also be generated by heavy-duty diesel delivery and haul trucks and smaller diesel worker trucks, their emissions would be widely distributed and not generally concentrated in one location near potential receptors. Thus, only the DPM emissions from off-road diesel equipment were analyzed.

$$4.57 \text{ tons/phase} \times 2000 \text{ lbs/ton} \div 4 \text{ years/phase} \times 5 \text{ acres}/903 \text{ acres} \div (365 \text{ days/yr} \times 24 \text{ hrs/day}) = 1.44 \times 10^{-3} \text{ lbs/hr}$$

While the construction activity would likely occur 8 to 10 hours per day and approximately 250 days per year, the cancer risk is calculated on an annual basis; thus, the hourly emission rate may be annualized as well, provided this emission rate is applied in the dispersion model to all hours of the day and all days of the year. Due to the effect of meteorological conditions, this approach tends to result in a more conservative (higher) estimate of the modeled concentrations.

2.1 Potential Receptors

As the residential and commercial development would proceed, residences and workplaces would be located in the vicinity of construction of future development. The specific location of these receptors is not known. Cancer risks to sensitive receptors, such as residents, were determined for this analysis because such receptors are assumed to be exposed for a longer period (e.g., 24 hours per day, 350 days per year) than workplace receptors (e.g., 8 hours per day, 245 hours per year).

As the proposed project is built out, sensitive receptors (new residential development, schools, etc.) may be located near construction activities. As previously mentioned, the purpose of this analysis is to determine whether the maximum cancer risk would exceed 10 in one million and if so, the allowable proximity of future construction activity to sensitive receptors to avoid significant health impacts.

3.0 AIR DISPERSION MODELING

The EPA-approved dispersion model AMS/EPA Regulatory Model (AERMOD), Version 7.1.0 (Lakes Environmental 2011) was used to calculate the health impacts associated with DPM emissions from off-road construction equipment (AERMOD output files are included in Appendix A). The AERMOD Terrain Preprocessor (AERMAP) was not used for this analysis, since the model is not modeling a particular site but rather a simulated 5-acre construction site that could occur anywhere within the overall development area. Accordingly, AERMOD was run assuming flat terrain (i.e., the receptors are at the same elevation as the base of the DPM source area).

3.1 Site-Specific Meteorological Data

AERMOD-ready meteorological data available from the Tejon Ranch Company were used in the AERMOD model. Three years of on-site meteorological and air quality data (2005 through 2007) were collected from a monitoring station located in Lebec, California at a location approximately 300 meters east of Interstate 5. The meteorological data files were obtained from Erler & Kalinowki, Inc., which had performed an HRA for Environmental Impact Report for the Tejon Mountain Village project (Kern County 2009) using the Lebec data processed with the AERMOD Meteorological Preprocessor program (AERMET) (Cuadrado 2011). A wind rose illustrating prevailing wind speeds and directions for the period from 2005 through 2007 is shown in Figure 1. As shown, the wind direction data show a strong northwest-southeast pattern.

3.2 Source Modeling

Emissions from diesel mobile equipment were modeled using the area source option in AERMOD. 49 area sources with dimensions of 20 meters by 20 meters were utilized to create an approximately 5-acre source area with emissions dispersed equally throughout. A constant emission rate of 1.44 $x10^{-3}$ pounds per hour over the 5-acre source area was used for modeling purposes (refer to Section 2.1). This emission rate was divided among the 49 area sources, resulting in an emission rate of 2.95 x 10^{-5} pounds per hour for each area source. Based on California Air Resources Board (CARB) risk assessments for mobile DPM sources, a release height of 4.15 meters was utilized for all area sources, and an Initial Vertical Dimension (IVD) of 0.965 was calculated based on SJVAPCD guidance (IVD = release height / 4.3). The emission rate was applied to each hour of day and all days of the year, as indicated previously. For additional details regarding source modeling protocol, please refer to the AERMOD input file in Appendix A.

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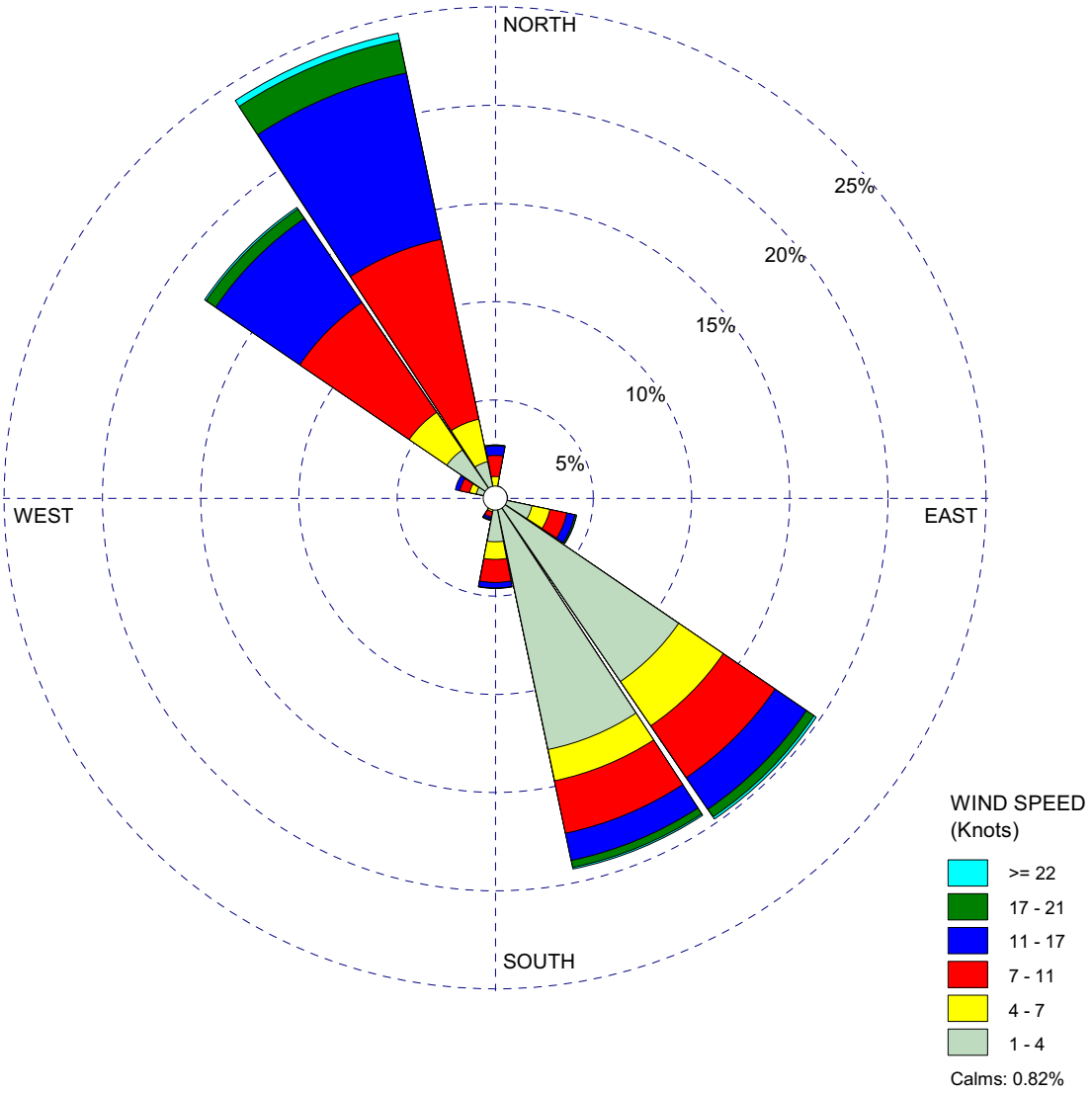

DATA PERIOD:	CALM WINDS:	TOTAL COUNT:
Start Date: 1/1/2005 - 00:00 **End Date: 3/30/2008 - 23:00**	**0.82%**	**28397 hrs.**
	AVG. WIND SPEED:	DATE:
	7.50 Knots	**6/21/2011**

DUDEK

5405-01

JUNE 2011

FIGURE 1

Wind Rose of Station #23187 - Lebec Monitoring Station, CA

Health Risk Assessment for the Tehachapi Upland Multi-Species Habitat Conservation Plan

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3.3 Receptor Modeling

A nested grid of receptors was set up around the 5-acre source area. A receptor interval spacing of 25 meters, starting at the boundary of the source area, was used around the perimeter out to 100 meters (consistent with SJVAPCD guidance). The receptor interval increased to 50 meters within 250 meters of the source area, 100 meters within 500 meters of the source area, 250 meters within 1,000 meters of the source area, and 500 meters within 2,000 meters of the source area. The default ground-level elevation value for receptor locations was used (i.e., AERMOD calculates airborne concentrations at ground level). For additional details regarding source modeling protocol, please refer to the AERMOD input file in Appendix A.

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4.0 EVALUATION OF CANCER RISK

4.1 DPM Concentration

The maximum predicted concentration of DPM would be 0.025 $\mu g/m^3$ and would be located along the northwestern boundary of the 5-acre source area. Additional information is included in the AERMOD output file (Appendix A).

4.2 Cancer Risk Calculation

The cancer risk calculations were performed by multiplying the modeled DPM concentrations from AERMOD by the appropriate risk values. The exposure and risk equations that are used to calculate the cancer risk at residential receptors are taken from the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA) manual for health risk assessments prepared under the Air Toxics Hot Spots program (OEHHA 2003).

The potential exposure pathway for DPM includes inhalation only. Sensitive receptors in the vicinity of any given phase of construction would be exposed to DPM concentrations over a 4-year period; therefore, the cancer risk calculations for all exposures assume that a receptor is exposed continuously for 4 years. Cancer risks were evaluated using the factors and equations identified in the OEHHA risk assessment manual (OEHHA 2003), which are indicated below:

Cancer risk = C_{air} * (Slope Factor * DBR * A * EF * ED * 10^{-6} / AT)

where:

C_{air}	=	concentration of DPM in microgram per cubic meter ($\mu g/m^3$)
Slope Factor	=	1.1 $(mg/kg\text{-}day)^{-1}$ for DPM,
DBR	=	breathing rate in liter per kilogram of body weight per day (393)
A	=	inhalation absorption factor (1 for DPM)
EF	=	exposure frequency in days per year (350)
ED	=	exposure duration in years (4)
AT	=	averaging time period over which exposure is averaged in days (25,550 days for 70 years)

This equation can be simplified to the following:

Cancer risk = C_{air} * 23.69 * 10^{-6} = C_{air} * 23.69 "in one million"

Utilizing a maximum DPM concentration of 0.025 $\mu g/m^3$ (maximum predicted concentration from AERMOD) in the above equation results in a cancer risk of 0.6 in one million, which is less than 10 in one million.

5.0 CONCLUSIONS

Based on this analysis, the health impacts resulting from construction activities associated with the proposed project would not exceed an incremental cancer risk of 10 in one million, since the maximum anticipated cancer risk was 0.6 in one million. As a result, construction activities near sensitive receptors over the course of project construction are not anticipated to create significant health impacts to those receptors.

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APPENDIX A

AERMOD Modeling Files

Appendix H

TU MSHCP Traffic Study

DRAFT

TEHACHAPI UPLANDS MULTIPLE SPECIES HABITAT CONSERVATION PLAN
Traffic Study

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October 7, 2011

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1.0 INTRODUCTION

This report describes the results of a traffic analysis carried out for the proposed Tehachapi Uplands Multiple Species Habitat Conservation Plan in unincorporated Kern County. The purpose of the study is to serve as a technical source for the project's Environmental Impact Statement (EIS).

1.1 OVERVIEW

Tejon Ranchcorp (TRC) has developed the proposed Tehachapi Uplands Multiple Species Habitat Conservation Plan (MSHCP) to meet the requirements of an incidental take permit (ITP). The MSHCP was developed for long-term protection and conservation of habitat for the Covered Species.

The permit would cover 141,886 acres of the 270,365 acre Tejon Ranch located in Kern County and is hereby referred to in this report as the "Covered Lands". Activities that would be covered by the permit include ongoing Ranch operations (excluding hunting and mineral extraction) and planned future community developments within and adjacent to the Interstate 5 (I-5) corridor in two development areas: TMV Planning Area and the Lebec/Existing Headquarters Area.

The proposed MSHCP includes a comprehensive, permanent land preservation and developed program for the Covered Lands. Four alternatives are considered in this traffic analysis:

- **No Action Alternative -** assumes that the issuance of an ITP would not occur and that the Ranchwide Agreement remains in effect, that development of the TMV project and other future commercial and residential development allowed within the Covered Lands would not occur and that current existing ranch uses would continue at current levels into the future.

- **Proposed MSHCP Alternative** - assumes that a 50-year ITP would be issued for all Covered Species and Plan-Wide Activities (generally consisting of existing ranch uses), as well as implementation of the Ranchwide Agreement would occur on the Covered Lands. Development would occur adjacent to the I-5 corridor (i.e., the TMV Planning Area and the Lebec/Existing Headquarters Area). The development of the TMV Planning Area would include approximately 3,624 dwelling units and up to 1,264,920 square feet of commercial development. The development of the Lebec/Existing

Headquarters Area would include up to eight dwelling units and 1,339,470 square feet of commercial development. The total development of both the TMV Planning Area and Lebec/Existing Headquarters Area would be 3,632 dwelling units and 2,604,390 square feet of commercial development.

- **Condor HCP Alternative –** assumes the same development scenario as the Proposed MSHCP Alternative, but a 50-year ITP would be issued covering only the California condor. This alternative would include California condor conservation measures, but would not include conservation measures for any other Covered Species.

- **Kern County General Plan Buildout Alternative** - assumes development to proceed in accordance to the Kern County General Plan including implementation of the TMV project. Development would occur on a project-by-project basis and in total would include 7,238 dwelling units and 2,944,810 square feet of commercial development. Existing ranch uses would also continue under this alternative.

- **Condor Critical Habitat Avoidance MSHCP Alternative** - assumes that a 50-year ITP would be issued for all Covered Species and Plan-Wide Activities (generally consisting of existing ranch uses), as well as implementation of the Ranchwide Agreement would occur on the Covered Lands. This alternative assumes no commercial or residential development within any designated critical habitat for the California condor. It would not include the TMV project, but it would follow the Kern County current General Plan designations and cluster most commercial and residential development in the southwestern portion of the Covered Lands in the portion of the TMV Planning Area near I-5, including West of the Freeway, in areas outside condor critical habitat. Development would also include the Lebec/Existing Headquarters Area, which in not within condor critical habitat. In total this alternative would allow for 3,161 dwelling units and 2,604,390 square feet of commercial development.

Each alternative is further described in Chapter 2.0 of this traffic report. This traffic study identifies potential impacts associated with the MSHCP and its alternatives.

1.2 HIGHWAY ANALYSIS METHODOLOGY

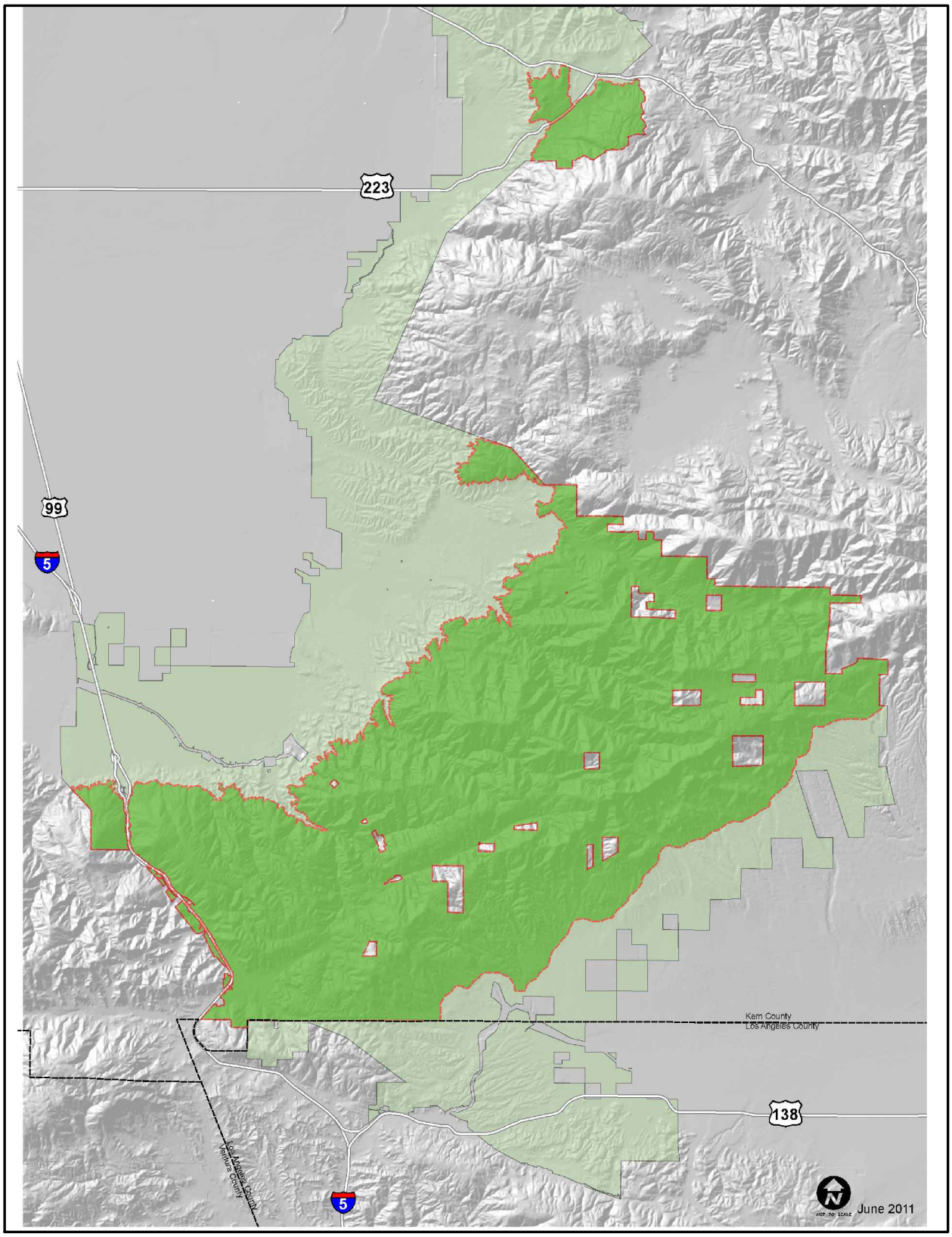
The plan area for this analysis is illustrated in Figure 1-1. It defines the area that would be covered by the MSHCP and for which different land uses are analyzed here.

The study area is defined according to facilities that are measurably impacted by the project based on the performance criteria outlined in this chapter. It comprises northern and southern regional areas and incorporates areas covered by the cumulative projects considered in Chapter 4 of the Supplemental Draft EIS. The northern regional area is in Kern County and the southern regional area is in the northwest part of Los Angeles County. The analysis focuses on State Highway segments, specifically Interstate 5 (I-5) and State Route 138 (SR-138).

In traffic impact studies, impact criteria are based on two primary measures. The first is "capacity," which establishes the vehicle carrying ability of a road segment, and the second is "volume." The volume measure is either a traffic count (in the case of existing volumes) or a traffic forecast for a future point in time. The ratio between the volume and the capacity gives a volume/capacity (V/C) ratio, and based on that V/C ratio, a corresponding level of service (LOS) is defined.

Traffic LOS is designated A through F, with LOS A representing free flow conditions and LOS F representing severe traffic congestion. The impact analysis for freeway mainline segments is based on annual average daily traffic (AADT) two-way volumes. It should be noted that V/C methodology does not account for operational effects such as upstream queuing from a downstream bottleneck. Under such conditions, a freeway segment may be congested (in terms of travel speed) even though the segment itself has adequate capacity for the demand.

For the I-5 freeway, there are different allowable levels of service (LOS) depending on the segment location. The LOS "C", "D" and "E" segments are illustrated in Figure 1-2. These are the LOS designations specified by Caltrans for this section of I-5 (see letter of 8/15/08 in Appendix A). For this analysis, an AADT equivalent capacity was calculated based on peak hour capacities that have been used in previous EIR's such as certified for the TMV project. The derived volumes are shown in Table 1-1. This converts the hourly capacity to an AADT equivalent at the allowable LOS. A volume/capacity over 1.00 is considered a capacity deficiency for the purpose of this analysis.

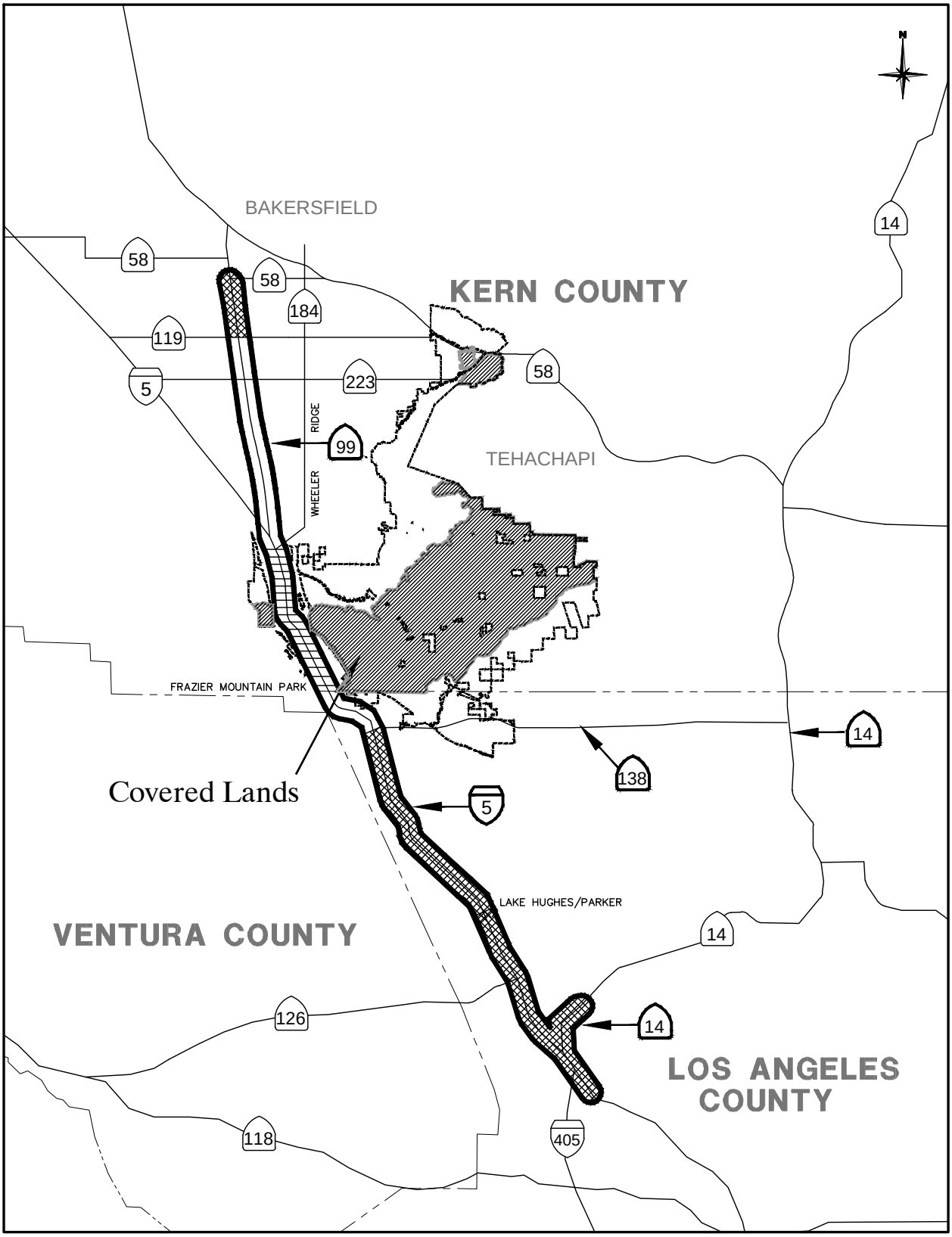


Legend

Covered Lands Boundary
Tejon Ranch Boundary

Figure 1-1

PLAN AREA



Legend

- Allowable LOS "E"
- Allowable LOS "D"
- Allowable LOS "C"
- Tejon Ranch Boundary
- Covered Lands

Figure 1-2

LEVEL OF SERVICE CLASSIFICATIONS FOR INTERSTATE 5 (I-5)

Table 1-1

HIGHWAY AADT CAPACITY CALCULATIONS

Location	Maximum Allowable		AADT/Peak Hour Ratio[1]	AADT Capacity Equivalent**
	LOS*	Peak Hour Capacity[1]		
EXISTING				
Kern County				
I-5 s/o Fort Tejon IC	C	5,332	27.3	145,564
Los Angeles County				
I-5 s/o Gorman Road IC	D	6,462	28.8	186,1606
I-5 s/o SR-138 IC	E	5,952	30.1	179,155
SR–138 e/o "A" ST IC	E	1,700	21.2	36,040
2030 FORECAST				
Kern County				
I-5 s/o Fort Tejon IC	C	6,272	26.7	168,090
Los Angeles County				
I-5 s/o Gorman Road IC	D	6,620	30.8	203,896
I-5 s/o SR-138 IC	E	6,268	29.3	183,652
SR–138 e/o "A" ST IC	E	3,962	18.8	74,486

Note:
* See Figure 1-2 for LOS area definitions
** Two direction AADT capacity. At allowable LOS, a V/C over 1.00 is considered a capacity deficiency in this analysis.
[1] One direction hourly capacity as reported in the TMV Project Traffic Study, October 2009.

Abbreviations:

AADT – Annual Average Daily Traffic
LOS – Level of Service

For SR-138, the AADT equivalent capacity assumes that SR-138 will be widened from its existing 2 lanes to 4 lanes west of and within the proposed Centennial Project Area (i.e., it is considered to be a design feature of the Centennial Project). If the proposed Centennial Project is not built, the SR-138 will remain at its existing 2 lanes unless other funding sources or programs implement the widening.

1.3 TRAFFIC FORECASTS

The traffic forecasts for the I-5 freeway used in this traffic study have been prepared using information from the TMV Project Traffic Study (October 2009). The TMV Project Traffic Study uses information from two primary sources. The first is the traffic model maintained by the Kern County Council of Governments (KernCOG) and referred to here as the Kern County Traffic Model (KCTM). The year 2030 cumulative version of the model was used to estimate with and without project volumes on the Countywide transportation system, and the resulting data formed the basis for the northern regional study area traffic forecasts.

The second set of data used is from the East Antelope Valley Traffic Analysis Model (EAVTAM). This model includes all of Los Angeles County plus south Kern County and was used to provide information regarding project trips in the southern regional study area, which is in northwest Los Angeles County.

The cumulative projects and demographic growth projections that are assumed in the 2030 traffic forecasts and are used in this analysis as 2030 baseline conditions are discussed in the following section.

1.4 CUMULATIVE ANALYSIS

This traffic analysis uses a “long-range projections” approach to cumulative growth. This uses demographic and related traffic forecasts for a horizon year (2030) in which all anticipated growth by that year is accounted for. It offers a more comprehensive analysis framework than simply adding a list of cumulative projects to an existing Baseline condition. Growth projections used in the long-range analysis include current development projects and development applications, such as the proposed Frazier Park Estates and Centennial projects, plus other anticipated growth, consistent with the Countywide General Plan.

To illustrate how the 2030 forecasts presented in this report represent a long-range cumulative transportation setting, Table 1-2 contains a list of cumulative projects. The Kern County area accounts

Table 1-2

CUMULATIVE PROJECTS

Name	Location Description	Development DU	Development TSF or Acres
KERN COUNTY			
BLH Development, LLC	East of I-5 near Kern Co/LA Co Border	33 DU	--
CAL Cart/WZI	Nec Frazier Mtn Park Rd & Cuddy Cyn Rd	--	35 Acres
Frazier Park/Lebec Specific Plan	Frazier Mountain Park	643 DU**	148 Acres
Frazier Park Estates/Cornerstone	Frazier Mountain Park Road	662 DU 41 DU	140 TSF 5.59 Acres
Galonska, Siegfried\Christine by French & Assoc	Frazier Mtn Park 3/4 mile east of Mt Pinos	--	145.2 TSF
Goertzen, Vernon	4358 Laval Rd, Arvin	--	5 Acres
Hallmark, Doug and Lori by Pinnacle Engineering	Castaic View Road Lebec	5 DU	--
Johnson, Harold and Rosalie/French & Assoc	W/S I-5 IN SE/4	--	196.8 TSF
Martin Bros Dev Inc/Richard Aldrich	Grand Terrace Dr & Frazier Mtn Park	4 DU	--
Martin, Curtis by Nelms Surveying	Hayride Road, east of I-5 Lebec	7 DU	--
Mettler Water District	Route 99 W. Mettler Frontage Rd	--	12.3 TSF
O-Neil Canyon Specific Plan	Lebec W of I-5	388 DU***	60 Acres Commercial
Schafer, Richard & Judy by French & Assocs.	Tecuya Rd and Woods Dr	4 DU	--
Tejon Industrial Complex West	West of I-5 between Wheeler Ridge and Grape Vine	--	7,000 TSF Logistics*
Tejon Industrial Complex East	East of I-5 near Laval Rd	--	7,000 TSF Logistics
Wheeler Ridge Farms, LLC	35 Miles S. Bak. West of I-5 & Laval	--	690 Acres
Subtotal		1,830 DU	14,490 TSF & 938 Acres
LOS ANGELES COUNTY			
Centennial	NW portion of the Antelope Valley in unincorporated portion of L.A. County. Southern Boundary of Kern County	22,998 DU	2,021 TSF Commercial Total of 12,485 TSF of employment generating uses.
Gorman Post Ranch	South of Kern County Border in Unincorporated Los Angeles County	533 DU	--
Project NO: 02-232	Lancaster RD	1851 SF lots, 15 MF lots	--
Project NO: 04-207	South of Quail Valley Road	28 SF lots	--
Project NO: TR062053	Gorman Post Rd north of Hwy 138 e/o I-5	191 SF lots	--
Project NO: TR066561	28718 San Francisquito Canyon Road	583 DU	--

(Cont.)

Table 1-2 (cont.)
CUMULATIVE PROJECTS

	Location	Development	
Name	**Description**	**DU**	**TSF or Acres**
LOS ANGELES COUNTY			
Project NO: TR066561	N/A	33 SF lots	--
Project NO: TR067278	28701 Sloan Canyon Rd	28 SF lots	--
Project NO: TR067617	N/A	13 DU	--
Project NO: TR51644-R1	N/A	713 SF lots	--
Northlake	N/A	1051 MF lots 645 SF lots	--
Newhall Ranch	West of I-5, along SR-126 corridor	20,885 DU	5,550 TSF
Subtotal		49,567 DU	18,035 TSF

* Partially built
** 173 Dwelling Units from Frazier Park/Lebec Specific Plan are within the Covered Lands boundary.
*** 5 Dwelling Units from O'Neil Canyon Specific Plan are within the Covered Lands boundary,

DU – dwelling unit
SF – single family
MF – multi-family
TSF – thousand square feet of floor area

for 1,830 dwelling units (DU), 14,490 thousand square feet (TSF) of building area, and 938 acres of other non-residential development (commercial and other such land uses). The Los Angeles area accounts for 49,567 DU and 18,035 TSF of development. The anticipated growth from these projects plus other growth in the region is accounted for in the models.

Table 1-3 gives a summary of existing and future population and employment for a set of subareas in the surrounding region that includes Los Angeles County (see subarea map in Figure 1-3). Unincorporated West Los Angeles, Santa Clarita and Lancaster areas (locations noted in the cumulative projects list) anticipate approximately a 150,371 increase in dwelling units by 2030. This increase accommodates the 49,567 DU anticipated growth listed in the cumulative projects lists and accommodate other projects in LA County not listed in the previously referenced list of cumulative projects.

Table 1-3

DEMOGRAPHIC DATA SUMMARY

	Dwelling Units			Population			Employment		
Subarea[1]	**2000**	**2030**	**Increase (%)**	**2000**	**2030**	**Increase (%)**	**2000**	**2030**	**Increase (%)**
1. West LA Co. Unincorporated	2,711	3,935	45.1	6,860	9,802	42.9	1,256	1,674	33.3
2. Palmdale Planning Area	37,977	63,306	66.7	130,246	216,940	66.6	19,056	25,649	34.6
3. Lancaster Planning Area	41,689	94,824	127.5	130,546	303,932	132.8	37,643	96,541	156.5
4. Kern County (East)	59,662	148,999	149.7	155,952	367,784	135.8	56,471	114,615	103.0
5. Kern County (West)[2]	167,321	330,455	97.5	504,048	964,082	91.3	212,501	456,727	114.9
6. Los Angeles County (south)	3,005,968	3,671,830	22.2	8,977,404	10,871,824	21.1	3,973,652	4,968,876	25.0
7. Orange County	900,730	1,068,036	18.6	2,846,289	3,391,249	19.1	1,385,976	2,043,673	47.5
8. Riverside County	516,812	898,272	73.8	1,545,387	2,697,634	74.6	476,882	990,283	107.7
9. San Bernardino County	444,933	692,785	55.7	1,378,747	2,144,979	55.6	430,437	920,727	113.9
10. Ventura County	250,385	309,210	23.5	753,197	936,013	24.3	286,418	431,499	50.7
11. Victor Valley (RSA 32)	69,493	112,327	61.6	214,946	346,915	61.4	42,841	91,714	114.1
12. Barstow (RSA 31)	37,419	60,484	61.6	115,740	186,801	61.4	23,068	49,384	114.1
13. Santa Clarita (RSA 8)[3]	48,765	144,777	196.9	156,536	464,734	196.9	71,965	250,496	248.1
14. Angeles Forest (LACO)	2,228	3,073	37.9	4,734	6,422	35.7	4,449	5,882	32.2
15. East LA Co. Unincorporated	13,687	19,736	44.2	40,602	57,369	41.3	7,116	9,611	35.1
TOTAL	5,599,780	7,622,048	36.1	16,961,234	22,966,480	35.4	7,029,731	10,424,352	48.3

[1]See Figure 1-3 for the boundaries of the subareas located within North Los Angeles County, Kern County and West San Bernardino County.

[2] EAVTAM2 data augmented to account for Tejon Industrial Complex (2030).
[3] Data from the SCVCTM has been substituted in the EAVTAM2 model for the Santa Clarita Valley area.

Source: EAVTAM2 (except for Kern County and the Santa Clarita Valley as noted above)

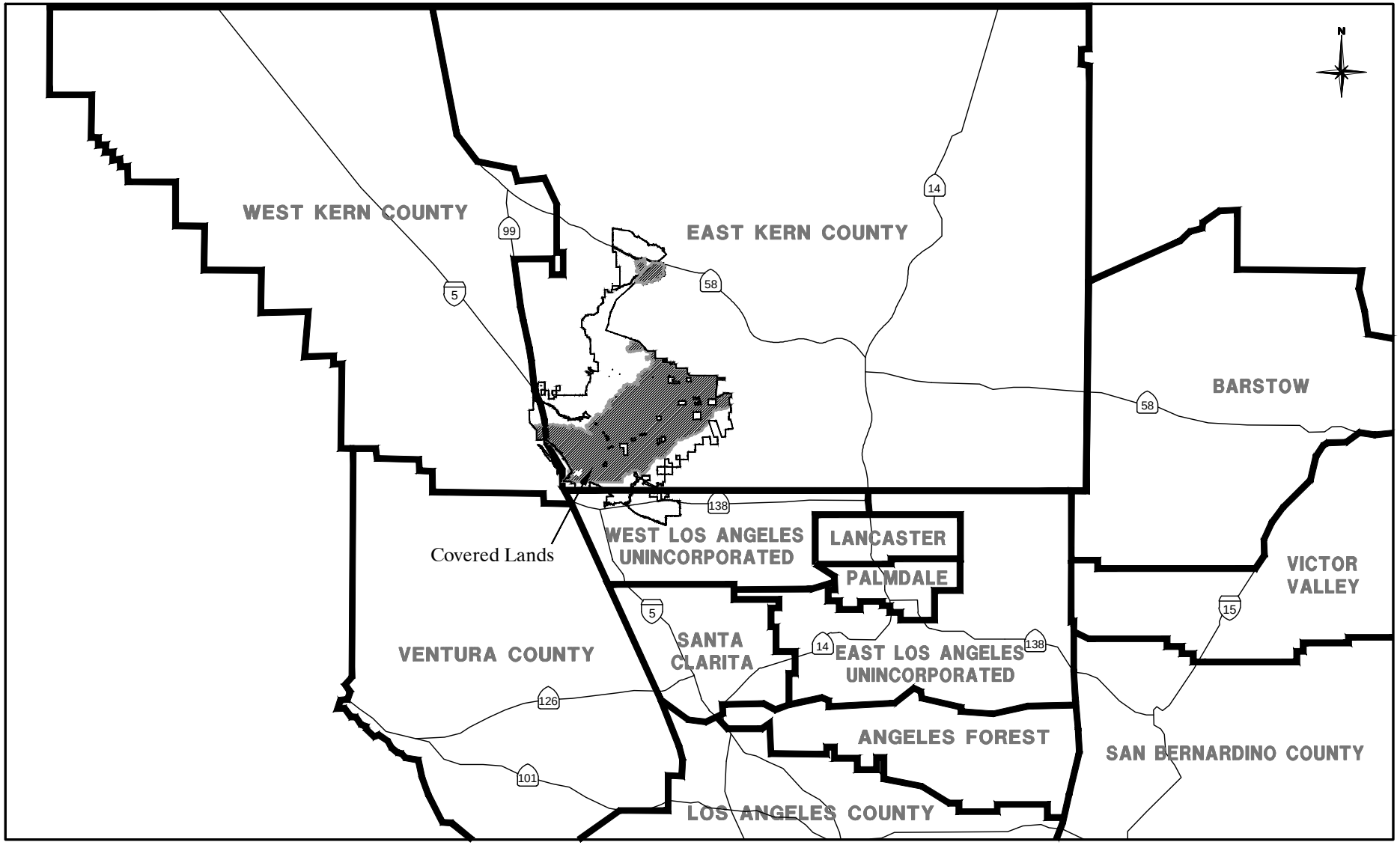


Figure 1-3

KCTM & EAVTAM SUBAREAS

2.0 ALTERNATIVES ANALYZED

This chapter describes the traffic characteristics of the MSHCP and its alternatives. Trip generation is estimated based on the development activities that would be covered by the MSHCP and the travel patterns from those development activities in relation to the regional study area are described.

2.1 OVERVIEW

The following section summarizes the major components of each of the alternatives including the No Action Alternative, Proposed MSHCP Alternative, Condor HCP Alternative and Kern County General Plan Buildout Alternative. Table 2-1 summarizes the land uses in the project area for the alternatives analyzed, and the following discusses the key characteristics of each alternative.

2.1.1 No Action Alternative

This alternative assumes that an incidental take permit (ITP) would not be issued and that development of the TMV project and other future commercial or residential development allowed within the Covered Lands under the Ranchwide Agreement would not occur. Current existing ranch uses would continue at current levels into the future and include: livestock grazing, fuel management, filming, passive recreation (including existing hunting program), faming and irrigation systems, repair and maintenance and use of roads, maintenance of utilities, back country cabins, ancillary ranch structures and fencing.

2.1.2 Proposed MSHCP Alternative

The Proposed MSHCP Alternative assumes that a 50-year ITP would be issued for all Covered Species, and Plan-Wide Activities (generally the same as the existing ranch uses previously mentioned in the No Action Alternative), as well as implementation of the Ranchwide Agreement would occur on the Covered Lands. No development would occur within the Condor Study Area and in total, approximately 129,318 acres of the 141,886 acres of Covered Lands would be permanently preserved as open space under this alternative.

Table 2-1

SUMMARY OF ALTERNATIVES

Location	Proposed MSHCP and Condor HCP Alternatives		Kern County GP Buildout Alternative		Condor Critical Habitat Avoidance MSHCP Alternative	
	DU	**SF**	**DU**	**SF**	**DU**	**SF**
TMV Planning Area						
Specific Plan Area (TMV Project)	3,450	960,000**	3,450	960,000**	2,979	960,000**
West of Freeway:						
Frazier Park	173	217,800	173	217,800	173	217,800
O'Neil Canyon	--	87,120	--	87,120	--	87,120
Other (Extensive Agriculture)	1	--	1	--	1	--
Oso Canyon	--	--	160	49,005	--	---
TMV Planning Area Subtotal	**3,624**	**1,264,920**	**3,784**	**1,313,925**	**3,153**	**1,264,920**
Lebec/Existing Headquarters Area						
O'Neil Canyon	5	577,170	5	577,170	5	577,170
Specific Plan Required	--	762,300	--	762,300	--	762,300
Resource Management	3	--	3	--	3	--
Lebec/Existing Headquarters Area Subtotal	**8**	**1,339,470**	**8**	**1,339,470**	**8**	**1,339,470**
Other Areas						
Other Lands*	--	--	3,446	291,415	--	--
TOTAL	**3,632**	**2,604,390**	**7,238**	**2,944,810**	**3,161**	**2,604,390**
TOTAL Development Disturbance (Acreage)	**5,533**		**12,142**		**4,496**	

Notes:
* - Dwelling Units and Commercial SF is scattered throughout Covered Lands.
See Figure 3-2 for Land Use designations and locations:
4.3 Specific Plan Required
8.2 Resource Reserve (1du/20acres and 1du/80acres)
8.3 Extensive Agriculture (1du/20acres and 1du/80acres)
8.5 Resource Management (1du/20acres and 1du/80acres)
** - Commercial SF consists of 160,000 SF of retail, 750 hotel rooms (450,000 SF), and 350,000 SF of support services.

Development would occur in two locations that are adjacent to the I-5 Corridor, the TMV Planning Area and the Lebec/Existing Headquarters Area. The total amount of Covered Activity development that would occur in both areas under the Proposed MSHCP Alternative includes 3,632 dwelling units and 2,604,390 square feet of commercial development with a disturbance area of approximately 5,533 acres.

The TMV Planning Area includes the TMV Specific Plan Area, Oso Canyon, and an area referred to in this analysis as West of the Freeway. Together the development in the TMV Planning Area would total approximately 3,624 dwelling units and up to 1,264,920 square feet of commercial development within the disturbance area of approximately 5,252 acres.

The total development in this area is broken out as follows. The TMV project is located east of the I-5 Freeway in the TMV Planning Area and was approved by Kern County, with the Specific Plan and corresponding General Plan Amendments and an Environmental Impact Report in October of 2009. The TMV Project includes 3,450 dwelling units, 160,000 square feet of commercial retail, 750 hotel rooms, which translate to approximately 450,000 square feet, and up to 350,000 square feet of support uses (e.g., hotel lobby support services, food and beverage service, golf clubhouses, equestrian facilities and private recreation facilities). This gives a total of approximately 960,000 square feet of commercial in the TMV Project Area. In the West of the Freeway, there are approximately 174 dwelling units and 304,920 square feet of commercial development.

Although no development plans currently exists for the 410-acre Lebec/Existing Headquarters Area, the Proposed MSHCP Alternative proposes development consistent with the current General Plan designation that allows up to eight dwelling units and 1,339,470 square feet of commercial development. Five of the eight dwelling units and 577,170 square feet of the 1,339,470 square feet of commercial are located within the O'Neil Canyon Area.

2.1.3 Condor HCP Alternative

The Condor HCP Alternative assumes that a 50-year ITP would be issued for only the California condor. This would include California condor conservation measures, but would not include conservation measures for any other Covered Species. This alternative assumes implementation of the Ranchwide Agreement and development, open space preservation, and Plan-Wide Activities. Land uses in this project area for this alternative would be the same as the Proposed MSHCP Alternative.

Figure 2-1 shows the Proposed MSHCP Alternative and Condor HCP Alternative land use allocation.

2.1.4 Kern County General Plan Buildout Alternative

The Kern County General Plan Buildout Alternative assumes implementation of the TMV project as approved in the Specific Plan and EIR. Development on the Covered Land would require Kern County approval and would proceed on a project-by-project basis. This alternative includes 34,130 acres of open space. With respect to development, in total this alternative assumes 7,238 dwelling units and 2,944,810 square feet of commercial development within 12,142 acres of disturbance areas. Approximately 53 of the 7,238 dwelling units are located near State Route 223.

Existing ranch uses are the same as for the No Action Alternative. Figure 2-2 shows the Kern County General Plan land use allocations.

2.1.5 Condor Critical Habitat Avoidance MSHCP Alternative

The Condor Critical Habitat Voidance MSHCP Alternative assumes that a 50-year ITP would be issued for all Covered Species, and Plan-Wide Activities (generally the same as the existing ranch uses previously mentioned in the No Action Alternative). This alternative assumes no commercial or residential development within any designated critical habitat for the California condor. It also assumes implementation of the Ranchwide Agreement, so the development boundaries outside critical habitat conform to the development setbacks and general boundaries provided in that agreement.

This alternative does not include the TMV project, as the TMV project extends into critical habitat. Instead it would follow the Kern County current General Plan designations and cluster most commercial and residential development in the southwestern portion of the Covered Lands in the portion of the TMV Planning Area near I-5, including West of Freeway, in areas outside condor critical habitat. Development would also include the Lebec/Existing Headquarters Area, which is not within condor critical habitat.

Development under the Condor Critical Habitat Avoidance MSHCP Alternative would be consolidated onto the southwestern portion of the Covered Lands, near I-5 that are not within condor critical habitat. In the TMV Planning Area, this alternative would allow up to 2,979 dwelling units and

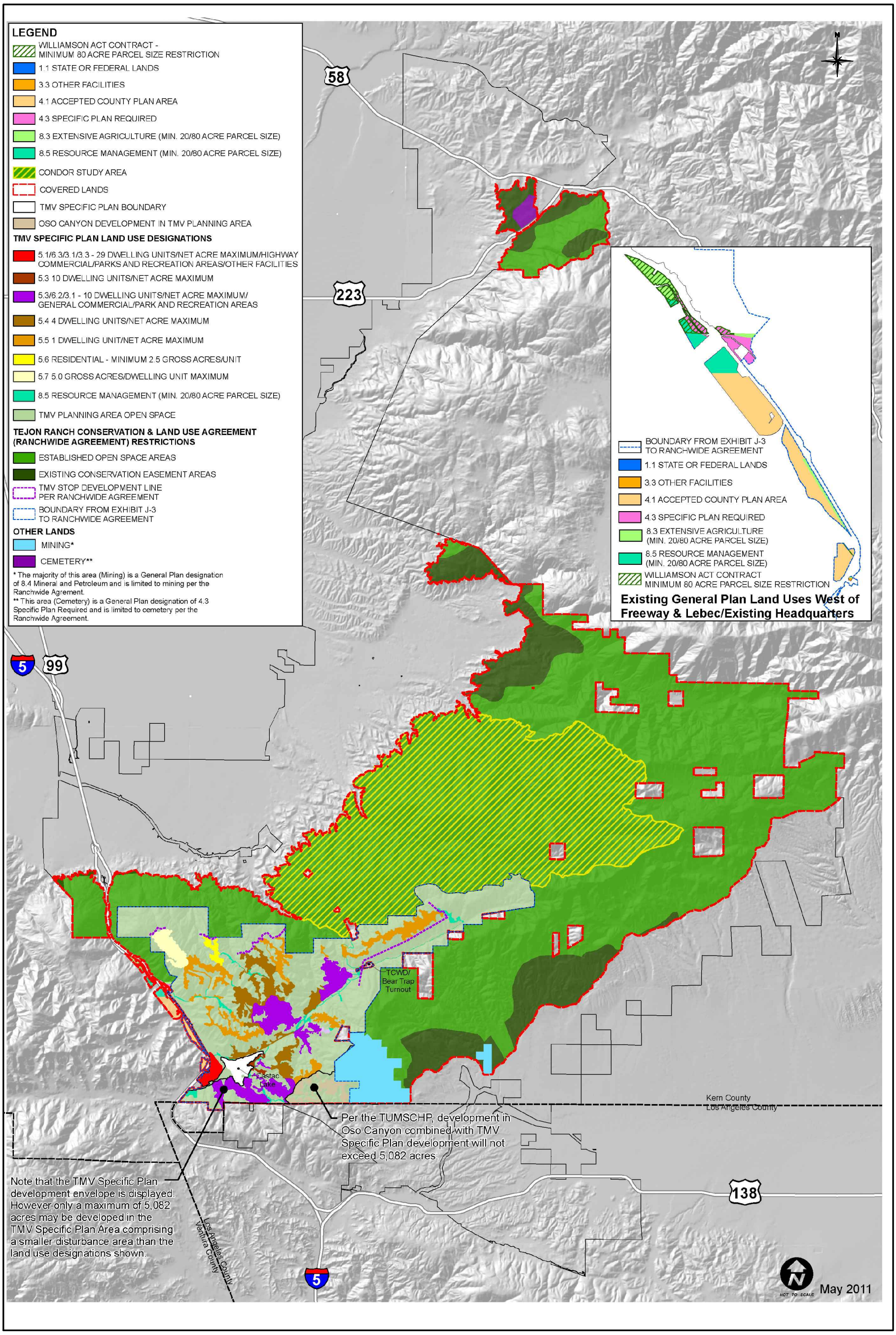


Figure 2-1

PROPOSED MSHCP AND CONDOR HCP
ALTERNATIVES LAND USE DESIGNATONS

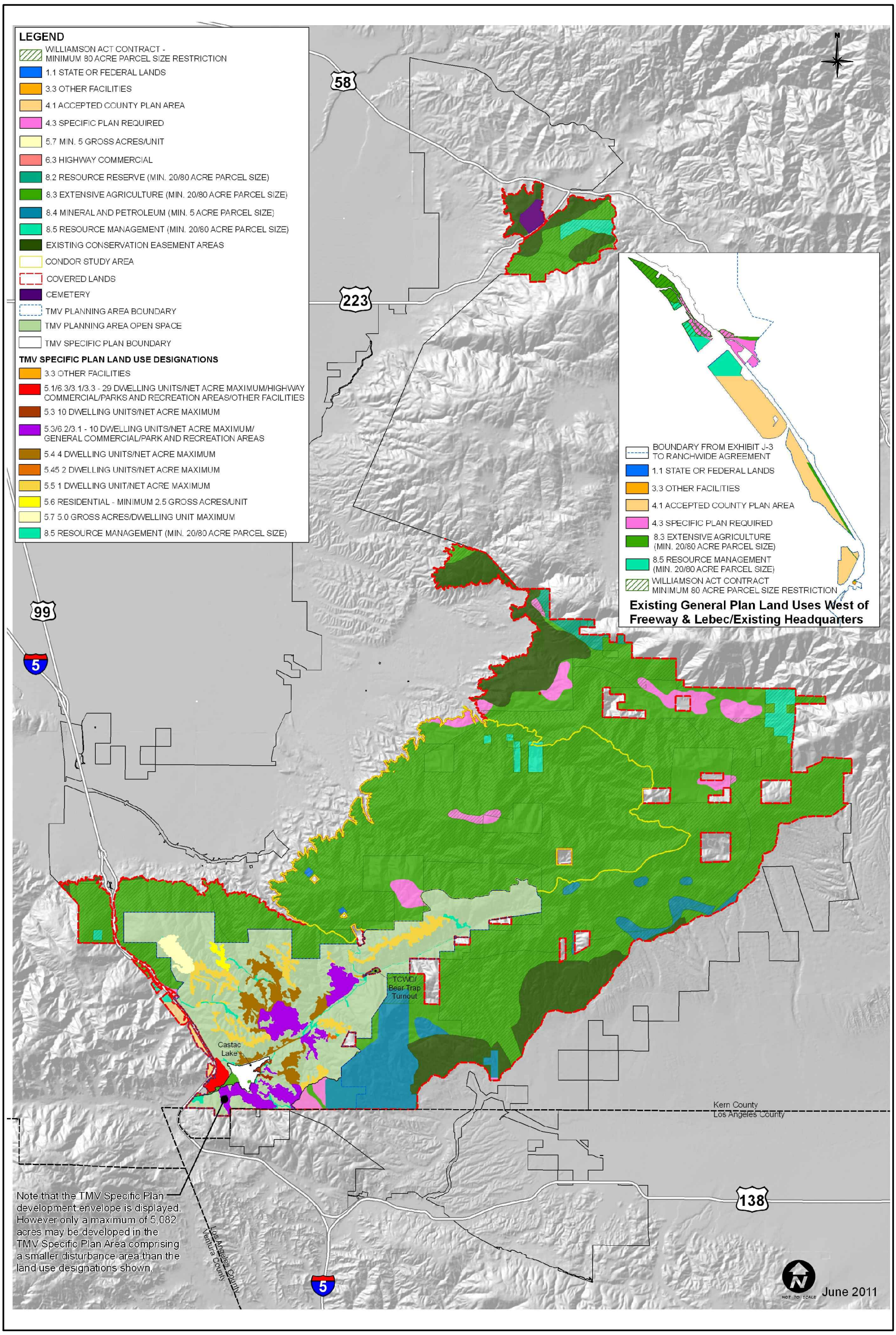


Figure 2-2

KERN COUNTY GENERAL PLAN BUILDOUT ALTERNATIVE LAND USE DESIGNATONS

960,000 square feet of commercial development (same as the commercial development in the Proposed MSHCP Alternative for the TMV Planning Area). West of the Freeway and Lebec/Existing Headquarters Areas, this alternative would allow up to 182 dwelling units and 1,337,470 square feet of commercial development. In total, this alternative allows up to 3,161 dwelling units and 2,604,390 square feet of commercial development to be built within a 4,496-acre disturbance area.

Figure 2-3 shows the Proposed MSHCP Alternative and Condor HCP Alternative land use allocation.

2.2 TRIP GENERATION

A summary of the land use and trip generation for the Proposed MSHCP Alternative and Condor HCP Alternative can be seen in Table 2-2. Listed in this table are the individual land uses, together with annual average daily traffic (AADT) trip generation for each. Listed at the bottom of the table are trip generation rates for the land uses that have been derived using published sources such as the Institute of Transportation Engineers (ITE) Trip Generation Manual (8th Edition).

For trip generation purposes, all Commercial uses outside of the TMV project are assumed to have a 20/80 percent split between Retail and Office uses respectively. Hence the 1,644,390 square feet of Commercial referred to here as "Non-TMV Commercial" has the following assumptions for the Proposed MSHCP Alternative:

- 60,984 square feet of Retail and 243,936 square feet of Office west of the I-5 Freeway.
- 267,894 square feet of Retail and 1,071,576 square feet of Office in the Lebec/Existing Headquarters Area.

A summary of the land use and trip generation for the Kern County General Plan Buildout Alternative is shown in Table 2-3. Similar to the Proposed MSHCP Alternative, a 20/80 split between Retail and Office uses respectively was assumed for Commercial outside of the TMV project for trip generation purposes. Hence the 1,984,810 square feet of Commercial referred to as "Non-TMV Commercial" has the following assumptions for the Kern County General Plan Buildout Alternative:

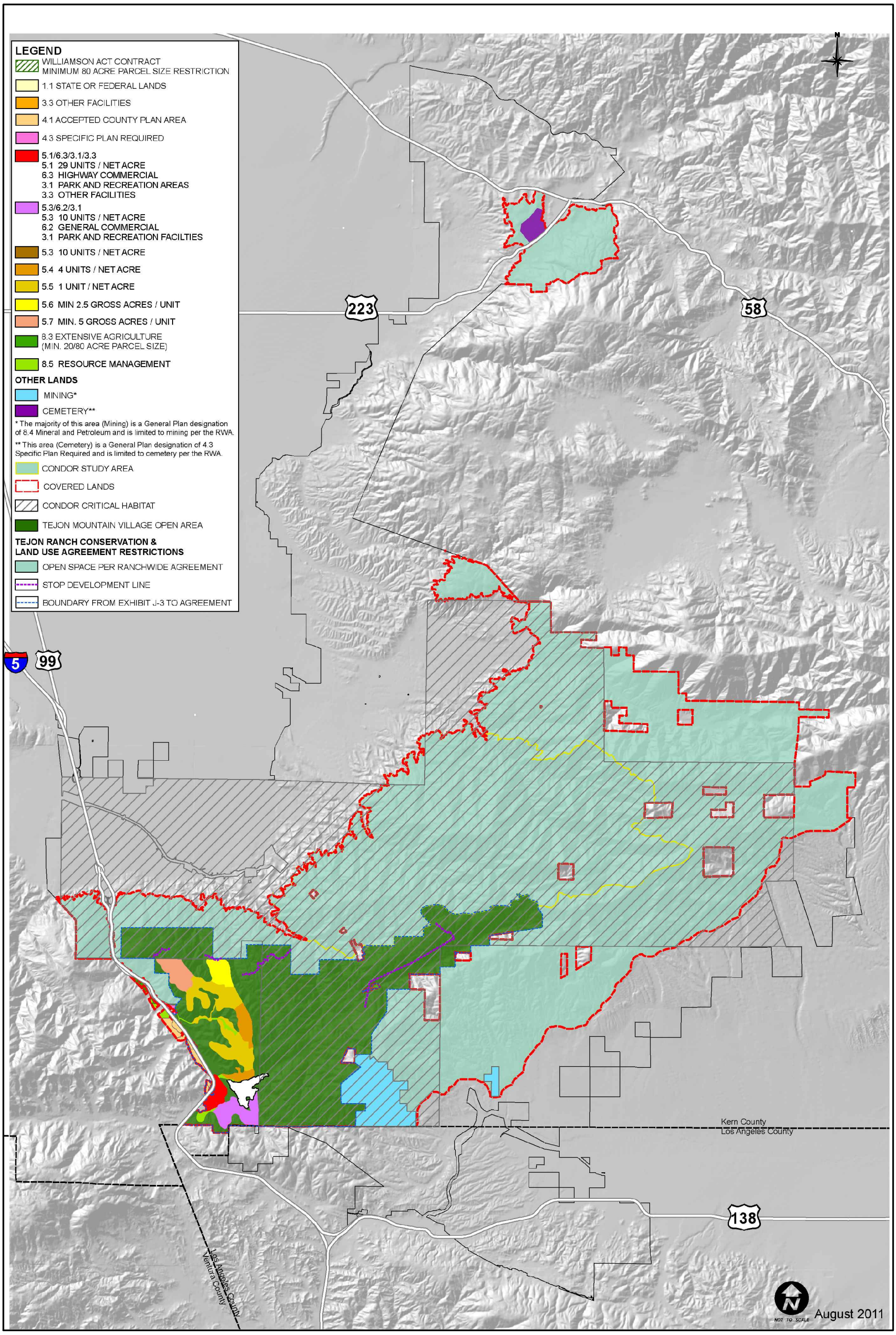


Figure 2-3

CONDOR CRITICAL HABITAT AVOIDANCE
ALTERNATIVE LAND USE DESIGNATONS

Table 2-2

PROPOSED MSHCP & CONDOR HCP ALTERNATIVES
TRIP GENERATION

Land Use Category	Units	Amount	AADT
TMV Project			
Single Family Residential	DU	3,050	29,189
Multi-Family Residential	DU	400	2,660
TMV Commercial (Retail & Hotel) *	SF	610,000	15,346
TMV Support Services *	SF	350,000	1,971
TMV Project Subtotal			**49,166**
West of Freeway and Lebec/Existing Headquarters Area			
Single Family Residential	DU	182	1,742
Non-TMV Retail	SF	328,878	14,122
Non-TMV Office	SF	1,315,512	14,484
Non-TMV Project Subtotal			**30,348**
TOTAL			**79,514**
Trip Rates			
Single Family Residential (ITE 210)	DU		9.57
Multi-Family Residential (ITE 220)	DU		6.65
Non-TMV Retail (ITE 820)	TSF		42.94
Non-TMV Office (ITE 710)	TSF		11.01

Notes:
* - From TMV Project Traffic Study
ITE – Institute of Transportation Engineers 8th Ed.
TSF – Thousand square feet of floor area

Table 2-3

KERN COUNTY GENERAL PLAN BUILDOUT ALTERNATIVE
TRIP GENERATION

Land Use Category	Units	Amount	AADT
TMV Project			
Single Family Residential	DU	3,050	29,189
Multi-Family Residential	DU	400	2,660
TMV Commercial (Retail & Hotel) *	SF	610,000	15,346
TMV Support Services *	SF	350,000	1,971
TMV Project Subtotal			**49,166**
West of Freeway, Lebec/Existing Headquarters Area and Other Lands			
Single Family Residential	DU	3,788	36,251
Non-TMV Retail	SF	396,962	17,046
Non-TMV Office	SF	1,587,848	17,482
Non-TMV Project Subtotal			**70,779**
TOTAL			**119,945**
Trip Rates			
Single Family Residential (ITE 210)	DU		9.57
Multi-Family Residential (ITE 220)	DU		6.65
Non-TMV Retail (ITE 820)	TSF		42.94
Non-TMV Office (ITE 710)	TSF		11.01

Notes:
* - From TMV Project Traffic Study
ITE – Institute of Transportation Engineers 8th Ed.
TSF – Thousand Square Feet of floor area

- 70,785 square feet of Retail and 283,140 square feet of Office west of the I-5 Freeway.
- 267,894 square feet of Retail and 1,071,576 square feet of Office in the Lebec/Existing Headquarters Area.
- 58,283 square feet of Retail and 233,132 square feet of Office for "Other Lands".

A summary of the land use and trip generation for the Condor Critical Habitat Avoidance MSHCP Alternative is shown in Table 2-4. Similar to the Proposed MSHCP Alternative, a 20/80 split between Retail and Office uses respectively was assumed for Commercial outside of the TMV Planning Area for trip generation purposes. Hence the 1,984,810 square feet of Commercial referred to as "Non-TMV Commercial" has the following assumptions for the Kern County General Plan Buildout Alternative:

- 60,984 square feet of Retail and 243,936 square feet of Office west of the I-5 Freeway.
- 267,894 square feet of Retail and 1,071,576 square feet of Office in the Lebec/Existing Headquarters Area.

2.3 TRIP DISTRIBUTION

Table 2-5 summarizes the trip distribution percentages assigned to the study area freeways. The I-5 north freeway has 23 percent of project trips and the I-5 south freeway has 51 percent of project trips. The remaining 26 percent is internal and local trip capture. Trips interacting with the Centennial project Area utilize the SR-138 and account for 29 percent of trips, and the remaining 22 percent of project trips to and from the south stay on the I-5 freeway south of SR-138.

The trip distribution percentages utilized in this traffic study are consistent with the distribution percentages that were previously reported in the TMV Project Traffic Study.

In the event that the proposed Centennial Project is not built, the trip distribution would be different than used in this analysis. The 29 percent of trips on SR-138 that interact with the Centennial project would be redistributed to the I-5 freeway north and south of the project. Table 2-6 summarizes the trip distribution when the proposed Centennial project is not considered.

Table 2-4

CONDOR CRITICAL HABITAT AVOIDANCE MSHCP ALTERNATIVE
TRIP GENERATION

Land Use Category	Units	Amount	AADT
TMV Project			
Single Family Residential	DU	2,579	24,681
Multi-Family Residential	DU	400	2,660
TMV Commercial (Retail & Hotel) *	SF	610,000	15,346
TMV Support Services *	SF	350,000	1,971
TMV Project Subtotal			**44,658**
West of Freeway, Lebec/Existing Headquarters Area and Other Lands			
Single Family Residential	DU	182	1,742
Non-TMV Retail	SF	328,878	14,122
Non-TMV Office	SF	1,315,512	14,484
Non-TMV Project Subtotal			**30,348**
TOTAL			**75,006**
Trip Rates			
Single Family Residential (ITE 210)	DU		9.57
Multi-Family Residential (ITE 220)	DU		6.65
Non-TMV Retail (ITE 820)	TSF		42.94
Non-TMV Office (ITE 710)	TSF		11.01

Notes:
* - From TMV Project Traffic Study
ITE – Institute of Transportation Engineers 8th Ed.
TSF – Thousand Square Feet of floor area

Table 2-5

TRIP DISTRIBUTION SUMMARY

Proposed MSHCP & Condor HCP Alternatives Trip Distribution

Location	AADT	Percent
I-5 North	18,288	23%
I-5 South (s/o SR-138) **	17,493	22%
SR-138 **	23,059	29%
Local/Internal	20,674	26%
Total	**79,514**	**100%**

Kern County General Plan Buildout Alternative Trip Distribution*

Location	AADT	Percent
I-5 North	27,587	23%
I-5 South (s/o SR-138) **	26,388	22%
SR-138 **	34,784	29%
Local/Internal	31,186	26%
Total	**119,945**	**100%**

Condor Critical Habitat Avoidance MSHCP Alternative Trip Distribution

Location	AADT	Percent
I-5 North	17,251	23%
I-5 South (s/o SR-138) **	16,501	22%
SR-138 **	21,752	29%
Local/Internal	19,502	26%
Total	**75,006**	**100%**

Note:
* - SR-223 is not analyzed in this study since the amount of dwelling units (53 DU) in the vicinity is below a threshold that would cause an impact.
**- A total of 51% utilizes I-5 South of the project and north of SR-138

Table 2-6

TRIP DISTRIBUTION SUMMARY
- No Centennial Project

Proposed MSHCP & Condor HCP Alternatives Trip Distribution

Location	AADT	Percent
I-5 North	29,420	37%
I-5 South (s/o SR-138) **	29,420	37%
Local/Internal	20,674	26%
Total	**79,514**	**100%**

Kern County General Plan Buildout Alternative Trip Distribution*

Location	AADT	Percent
I-5 North	44,380	37%
I-5 South (s/o SR-138) **	44,380	37%
Local/Internal	31,186	26%
Total	**119,945**	**100%**

Condor Critical Habitat Avoidance MSHCP Alternative Trip Distribution

I-5 North	27,752	37%
I-5 South (s/o SR-138) **	27,752	37%
Local/Internal	19,502	26%
Total	**75,006**	**100%**

Note:
* - SR-223 is not analyzed in this study since the amount of dwelling units (53 DU) in the vicinity is below a threshold that would cause an impact.

3.0 IMPACT ANALYSIS

The following sections discuss the project impacts to the study area highway system. Existing conditions are first described, and then project impacts for an existing plus project and a 2030 project buildout time frame are evaluated.

3.1 EXISTING CONDITIONS

This discussion of the existing transportation setting describes the transportation system serving the area and the current traffic volumes and operating conditions on the study area highway system. The information thereby provides a point of reference for describing anticipated future traffic conditions in the study area.

For the State highway system in this area, traffic count data was obtained from Caltrans, and the traffic counts represent 2009 conditions. The existing AADT equivalent capacities were derived by using data from the TMV Project Traffic Study.

Table 3-1 summarizes the traffic volumes and volume/capacity (V/C) ratios on the I-5 and SR-138 freeways. As can be seen, there are no deficient locations under existing conditions.

3.2 EXISTING PLUS PROJECT CONDITIONS

The analysis of existing plus project conditions provides a direct comparison with existing conditions. The analysis is hypothetical and is presented here for EIS purposes only. All external project trips were added to existing freeway volumes, and no trips were assigned to SR-138, as there is no proposed Centennial project under this scenario. Existing capacities were used to determine capacity deficiencies for existing plus project conditions.

Table 3-2 summarizes the traffic volumes and volume/capacity ratios on the I-5 for existing plus project conditions with the Proposed MSHCP and Condor HCP Alternatives, existing plus project conditions with the Kern County General Plan Buildout Alternative and existing plus project with the Condor Critical Habitat Avoidance MSHCP Alternative. As can be seen, there are no deficient locations.

Table 3-1

FREEWAY VOLUMES, CAPACITIES AND V/C SUMMARY
- Existing

Location	**AADT***	**Maximum Allowable LOS**	**AADT Equivalent Capacity**	**V/C****
I-5 North	69,000	C	145,564	.47
I-5 South (north of SR-138)	71,000	D	186,606	.38
I-5 South (south of SR-138)	68,000	E	179,155	.38
SR-138	3,600	E	36,040	.10

Notes:
* - Annual Average Daily Traffic (AADT)
Source: Caltrans Traffic and Vehicle Data Systems Unit 2010
** - A V/C greater than 1.00 represents a deficiency (The AADT Equivalent Capacity is the maximum volume at the allowable LOS).

Table 3-2

FREEWAY VOLUMES, CAPACITIES AND V/C SUMMARY
- Existing Plus Project

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C*
PROPOSED MSHCP AND CONDOR HCP ALTERNATIVES				
I-5 North	98,420	C	145,564	.68
I-5 South (north of SR-138)	100,420	D	186,606	.54
I-5 South (south of SR-138)	97,420	E	179,155	.54
SR-138	3,600	E	36,040	.10
KERN COUNTY GENERAL PLAN BUILDOUT ALTERNATIVE				
I-5 North	113,380	C	145,564	.78
I-5 South (north of SR-138)	115,380	D	186,606	.62
I-5 South (south of SR-138)	112,380	E	179,155	.63
SR-138	3,600	E	36,040	.10
CONDOR CRITICAL HABITAT AVOIDANCE MSHCP ALTERNATIVE				
I-5 North	96,800	C	145,564	.67
I-5 South (north of SR-138)	98,800	D	186,606	.53
I-5 South (south of SR-138)	95,800	E	179,155	.54
SR-138	3,600	E	36,040	.10

Notes:
* - A V/C greater than 1.00 represents a deficiency (The AADT Equivalent Capacity is the maximum volume at the allowable LOS).

3.2 2030 IMPACT ANALYSIS

The South Kern County and North Los Angeles County Areas are projected to have substantial growth over the next 25 years and that growth is reflected in the 2030 forecast volumes used in this analysis. As previously mentioned in the methodology section in Chapter 1.0, use was made of the TMV Project Traffic Study for 2030 forecast volumes on the I-5 freeway and AADT equivalent capacities were derived using the peak hour capacities reported.

The No Action Alternative is a no development baseline that assumes cumulative projects and demographic growth but no development on the Covered Lands. Note that in the No Action Alternative, 173 dwelling units and 5 dwelling units allocated as part of Frazier Park/Lebec Specific Plan and O'Neil Canyon Specific Plan respectively (See Table 1-2 Cumulative Projects) are within the Covered Lands boundaries and therefore will not be developed under this alternative. The Proposed MSHCP and Condor HCP Alternatives as well as the Condor Critical Habitat Avoidance MSHCP Alternative assume cumulative projects and demographic growth plus project development on the Covered Lands. The Kern County General Plan Buildout Alternative assumes cumulative projects and demographic growth plus General Plan development on the Covered Lands.

Table 3-3 summarizes the 2030 AADT volumes, AADT equivalent capacities, and resulting volume/capacity ratios for the No Action Alternative, Proposed MSHCP Alternative, Condor HCP Alternative, Kern County General Plan Buildout Alternative and Condor Critical Habitat Avoidance MSHCP Alternative. As previously discussed in the methodology section in Chapter 1.0, AADT equivalent capacities were derived using the allowable V/C per freeway segment. A V/C over 1.00 is considered a capacity deficiency.

As can be seen in Table 3-3, under the Proposed MSHCP and Condor HCP Alternatives as well as the Condor Critical Habitat Avoidance MSHCP Alternative, the I-5 freeway south of SR-138 has a capacity deficiency. Under the Kern County General Plan Buildout Alternative, I-5 North and I-5 south of SR-138 are both deficient.

Table 3-3

2030 FREEWAY VOLUMES, CAPACITIES AND V/C SUMMARY
- No-Project and With-Project

Location	AADT	Maximum Allowable LOS	AADT Equivalent Capacity	V/C*
NO ACTION ALTERNATIVE (No-Project) [1]				
I-5 North	148,692	C	168,090	.90
I-5 South (north of SR-138)	135,354	D	203,896	.67
I-5 South (south of SR-138)	178,434	E	183,652	.98
SR-138	36,250	E	74,486	.49
PROPOSED MSHCP AND CONDOR HCP ALTERNATIVES (With-Project)				
I-5 North	166,980	C	168,090	.99
I-5 South (north of SR-138)	175,906	D	203,896	.86
I-5 South (south of SR-138)	195,927	E	183,652	1.07
SR-138	59,309	E	74,486	.80
KERN COUNTY GENERAL PLAN BUILDOUT ALTERNATIVE (With-Project)				
I-5 North	176,280	C	168,090	1.05
I-5 South (north of SR-138)	196,526	D	203,896	.96
I-5 South (south of SR-138)	204,822	E	183,652	1.12
SR-138	71,034	E	74,486	.95
CONDOR CRITICAL HABITAT AVOIDANCE ALTERNATIVE (With-Project)				
I-5 North	165,943	C	168,090	.99
I-5 South (north of SR-138)	173,607	D	203,896	.85
I-5 South (south of SR-138)	194,935	E	183,652	1.06
SR-138	58,002	E	74,486	.78

Notes:
* - A V/C greater than 1.00 represents a deficiency (The AADT Equivalent Capacity is the maximum volume at the allowable LOS).
[1] – Baseline AADT is from 2030 forecast and assumes no development within the Covered Lands.

3.3 2030 VEHICLE MILES TRAVELED (VMT)

The VMT is calculated as the product of the trip generation and the average trip length. The average trip lengths used here are based on trip lengths from the TMV Project Traffic Study. Table 3-4 shows the VMT for the Proposed MSHCP and Condor HCP Alternatives, the Kern County General Plan Buildout Alternative and for the Condor Critical Habitat Avoidance MSHCP Alternative.

Table 3-4

2030 VEHICLE MILES TRAVELED

Trip Component	Trips	Average Trip Length	VMT
Proposed MSHCP and Condor HCP Alternatives			
Local/Internal	20,674	5.3	109,572
I-5 North	18,288	39.4	720,547
I-5 South	40,552	35.9	1,457,452
Total	**79,514**		**2,287,571**
Kern County General Plan Buildout Alternative			
Local/Internal	31,186	5.3	165,286
I-5 North	27,587	39.4	1,086,928
I-5 South	61,172	35.9	2,197,037
Total	**119,945**		**3,449,251**
Condor Critical Habitat Avoidance Alternative			
Local/Internal	19,502	5.3	103,361
I-5 North	17,251	39.4	679,689
I-5 South	38,253	35.9	1,373,283
Total	**75,006**		**2,156,333**

Appendix A: CALTRANS LOS ON THE I-5 FREEWAY

DEPARTMENT OF TRANSPORTATION
DISTRICT 6 – TRANSPORTATION PLANNING
1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616
PHONE (559) 488-4115
FAX (559) 445-6173
TTY (559) 488-4066

Flex your power!
Be energy efficient!

August 15, 2008

Mr. Craig M. Pope
Road Commissioner
County of Kern Roads Department
2700 M Street, Suite 400
Bakersfield, CA 93301-2375

Dear Mr. Pope:

Recently, the Department of Transportation (Department) Districts 6 and 7 coordinated an effort to identify the appropriate Level of Service (LOS) for evaluating impacts on the Grapevine area of Interstate 5 (I-5) in both Kern and Los Angeles Counties. This effort was undertaken because there are several development proposals located within both counties. The purpose of this letter is to provide the results of this effort, which defined the LOS thresholds of significance for I-5 within the Grapevine area. The following is the agreement between Districts 6 and 7 regarding LOS thresholds to be used in conducting traffic impact studies for proposed developments:

1. In Los Angeles County, LOS E is to be utilized as a threshold of significance for urban segments of I-5 through the Santa Clarita Valley, which extends from the southern-most reach of the study area (State Route 14 [SR-14]) north to Parker Road.

2. The goal of the Department is to maintain no less than LOS D in the rural areas of I-5 from Parker Road in Los Angeles County to Frazier Mountain Park Road in Kern County, but the Department acknowledges that this is not always feasible due to constraints such as geological, structural, or right-of-way conditions in this area. Therefore, LOS E from Parker Road to SR-138 and LOS D from SR-138 to and including the Frazier Mountain Park Road interchange are to be utilized as the thresholds of significance.

3. In Kern County north of the Frazier Mountain Park Road interchange on I-5, LOS C is the threshold of significance, which meets or exceeds LOS standards set by Kern County.

If you or your staff have any questions, please feel free to contact either John Liu, Deputy District 6 Director of Maintenance and Operations at (559) 488-4144, or myself at (559) 488-4115.

Sincerely,

SHARRI BENDER EHLERT
Deputy District Director
Planning and Local Programs

c: Barry Nienke, Kern County Roads
John Liu, Deputy District 6 Director, Maintenance and Operations
Frank Quon, Deputy District 7 Director, Operations
James McCarthy, Deputy District 7 Director, Planning, Public Transportation, and Local Assistance

Appendix I

Analysis of California Condor (*Gymnogyps californianus*) Use of Six Management Units Using Location Data from Global Positioning System Transmitters, Southern California, 2004–2009—Initial Report

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2010

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Conversion Factors and Datum

Conversion Factors

SI to Inch/Pound

Multiply	By	To obtain
kilometer (km)	0.6214	mile (mi)
meter (m)	3.281	foot (ft)
kilogram (kg)	2.205	pound avoirdupois (lb)

Datum

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83)

Analysis of California Condor (*Gymnogyps californianus*) Use of Six Management Units Using Location Data from Global Positioning System Transmitters, Southern California, 2004–09—Initial Report

By Matthew Johnson, Jeffrey Kern, and Susan M. Haig

Executive Summary

This report provides an analysis of California Condor (*Gymnogyps californianus*) space use of six management units in southern California (Hopper Mountain and Bitter Creek National Wildlife Refuges, Wildlands Conservancy—Wind Wolves Preserve, Tejon Mountain Village Specific Plan, California Condor Study Area, and the Tejon Ranch excluding Tejon Mountain Village Specific Plan and California Condor Study Area). Space use was analyzed to address urgent management needs using location data from Global Positioning System transmitters. The U.S. Fish and Wildlife Service provided the U.S. Geological Survey with location data (2004–09) for California Condors from Global Positioning System transmitters and Geographic Information System data for the six management units in southern California.

We calculated relative concentration of use estimates for each management unit for each California Condor (n = 21) on an annual basis (n = 39 annual home ranges) and evaluated resource selection for the population each year using the individual as our sampling unit. The most striking result from our analysis was the recolonization of the Tejon Mountain Village Specific Plan, California Condor Study Area, and Tejon Ranch management units during 2008. During 2004–07, the home range estimate for two (25 percent) California Condors overlapped the Tejon Mountain Village Specific Plan, California Condor Study Area, and Tejon Ranch management units (n = 8), and use within the annual home range generally was bimodal and was concentrated on the Bitter Creek and Hopper Mountain National Wildlife Refuges. However, 10 (77 percent) California Condor home ranges overlapped the Tejon Mountain Village Specific Plan, California Condor Study Area, and Tejon Ranch management units during 2008 (n = 13), and by 2009, the home range of every condor carrying a Global Positioning System transmitter (n = 14) overlapped these management units. Space use was multimodal within the home range during 2008–09 and was concentrated on Hopper Mountain Refuge in the south, Bittercreek Refuge and the Wind Wolves Preserve in the northwest, and the Tejon Mountain Village Specific Plan, California Condor Study Area, and Tejon Ranch management units in the northeast. Recolonization of the Tejon Mountain Village Specific Plan, California Condor Study Area, and Tejon Ranch management units reestablished traditional condor movement and foraging patterns in southern California and provides the travel corridor (approximately 20 kilometers wide) for recolonization of the northeastern part of the species historical range.

Introduction

The Federally Endangered California Condor (*Gymnogyps californianus*) is the largest land bird in North America weighing approximately 8.5 kg with a 2.8 m wingspan (Snyder and Schmitt, 2002). California Condors are obligate scavengers with a life history characterized by delayed maturity, low productivity, and relatively high adult survivorship (Koford, 1953). Although the California Condor's historical range was across much of the United States, northern Mexico, and southern Canada during the Pleistocene age, by 1982, the California Condor's range was limited to a small area surrounding the southern San Joaquin Valley, California, with a population size of 22 birds (fig. 1; Wilbur, 1976; Snyder and Snyder, 2000). A captive flock was established to stave off extinction in 1982, and by 1987, the last wild condor was brought into captivity (U.S. Fish and Wildlife Service, 2010]. Captive breeding efforts have been successful since 1988 with reintroduction to the wild beginning in 1992. Since that time, free-flying California Condor populations have been re-established at five release sites in the western United States (southern California—Hopper Mountain National Wildlife Refuge Complex; northern Arizona—Vermilion Cliffs; central California—Big Sur and Pinnacles National Monument) and in Baja California, Mexico—Sierra San Pedro de Mártir National Park (U.S. Fish and Wildlife Service, 2010).

The U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Service (USFWS) California Condor Recovery Program are undertaking a research program to model California Condor movement patterns and habitat use in historical and reintroduced populations. The goal of this research program is to better inform and enhance the management strategies at current condor release sites, identify and evaluate potential future release sites, and develop a metapopulation structure throughout the condor's historical range that will ensure sufficient connectivity among populations to maintain genetic variation and self-sustaining demographic rates over the long term. During early stages of this collaborative effort, USFWS requested that USGS provide a preliminary report focused on California Condor use of six management units in southern California to address urgent management needs (figs. 1 and 2). The objective of this report is to present analyses of California Condor use of these management units by the southern California Condor population to fulfill that request.

Methods

We used California Condor Global Positioning System (GPS) transmitter data to quantify condor use of six management units and seven ecoregions in southern California by calculating a relative concentration of use (RCU) estimate for each management unit and ecoregion (Neatherlin and Marzluff, 2004; Marzluff and others, 2004; Millspaugh and others, 2006). We calculated resource selection within the 99-percent fixed-kernel estimate of individual condor home ranges (Worton, 1987) by estimating the utilization distribution (UD, probability density function, Silverman, 1986) through the fixed-kernel procedure (Worton, 1989) with an automatic bandwidth selection method (reference or normal method, h_{ref}). The UD of an individual, or population of animals, can be used to estimate the probability and intensity of use for specific habitats or sites within an area of interest (for example, home range, Van Winkle, 1975; Marzluff and others, 2001, 2004). The total likelihood of use in a particular habitat or site is the total volume of the UD associated with that habitat or site, and concentration of use is the ratio of this volume (that is, probability of occurrence) to the availability of the habitat within the home range (fig. 3; Neatherlin and Marzluff, 2004; Marzluff and others, 2004; Millspaugh and others, 2006).

Concentration of use corresponds to other selection coefficients that relate resource use to availability (Manly and others, 2002; Marzluff and others,2004), and improves on traditional selection coefficients because it integrates relative selectivity as a continuous probabilistic process throughout the area of interest (for example, home range), appropriately uses individual animals as the sampling unit (Otis and White, 1999), and accounts for the unit sum constraint (Aebischer and others, 1993).

Management Units and Ecoregion Data

USFWS provided USGS with Geographic Information System (GIS) data for six management units (fig. 2). USGS supplemented these data with U.S. Department of Agriculture (USDA) GIS data (fig. 4; U.S. Forest Service ecological subregions, Cleland and others, 2007). It was necessary to supplement the GIS data provided by USFWS (fig. 2) to fully quantify condor resource selection within annual home ranges, as condor home ranges extended beyond the six management units of interest. We used USDA GIS data (fig. 4) because these data allowed us to delineate more ecologically relevant regions (that is, at an appropriate scale for analyzing California Condor movements) relative to other available GIS data for the region. We coalesced the 42 ecological subregions delineated within our study area (fig. 4) into seven ecologically relevant regions, and then merged these data with the GIS data provided by USFWS (fig. 2) to produce our base GIS map that contained six management units and seven ecoregions (fig. 5). Analyses were conducted using ArcMap 9.2 (ESRI, 2007).

Global Positioning System Transmitter Data

USFWS provided the USGS with GPS-transmitter (Argos/GPS PTT; Microwave Telemetry, Inc.©, Columbia, Maryland) location data (hourly locations, 05:00–20:00 PST) for the California Condor population in southern California. USGS also requested USFWS provide data on GPS-transmitter attachment dates and individual California Condor case histories to ensure data accuracy and utility. The original dataset contained 155,543 GPS locations for 35 individual condors (June 15, 2004—December 31, 2009). Of these, 5,342 locations were obtained while a condor was in captivity (for example, in a flight-pen prior to release or in a trap for periodic management activities). These location data (that is, data from captive birds) did not contribute to our understanding of California Condor space use and were not included in the analyses. Examination of the relevant condor GPS-transmitter location dataset (150,201 location points, n = 35 individuals) revealed that individual condors carried GPS transmitters for varying periods of time (length of time individual condors continuously carried a GPS transmitter ranged from 1–35 months), that 18 condors (51 percent) carried transmitters during multiple calendars years, and that 14 condors (40 percent) carried a transmitter for less than 6 months during a calendar year (June 15, 2004–December 31, 2009).

We produced annual home range, UD, and RCU estimates for individual California Condors that were equipped with GPS transmitters for a minimum of 6 consecutive months during any 1 calendar year (table 1; 2004–09; n = 21 individuals; 127,931 GPS locations) to quantify condor resource selection using an objective measure of resource availability during an explicit period of time (that is, annual home range). This data selection method reduced biases associated with comparing condor resource selection between bird's carrying GPS transmitters for a small portion of the annual cycle (for example, 1–3 months) and those carrying transmitters throughout the annual cycle, and it ameliorated potential biases in condor behavior associated with birds becoming acclimated to carrying a GPS transmitter. In our final GPS-transmitter

location dataset (table 1), nearly one-half of all condors carried GPS transmitters during multiple years (10 of 21 condors). We therefore calculated home range, UD and RCU estimates for each condor on an annual basis and modeled resource selection for the population each year using the individual as our sampling unit. However, as only two California Condors carried GPS transmitters during 2004–05 (table 1), we report and discuss space use during this period for each individual.

Home Range, Utilization Distribution, and Relative Concentration of Use Estimates

We evaluated two commonly used automatic bandwidth-selection methods (reference or normal method, h_{ref}; and least squares cross-validation, LSCV) to produce 99-percent fixed-kernel home range estimates and estimate UDs (39 UD estimates for 21 individual California Condors, 2004–09, fig. 3, table 1, appendix A). The bandwidth, or smoothing parameter, controls the neighborhood size within which observed locations contribute to the density estimate at a point (Silverman, 1986). The LSCV bandwidth selection method is frequently used in wildlife home range studies and often outperforms the h_{ref} bandwidth selection method (Silverman, 1986; Manly, 2002; Amstrup and others, 2004). However, we predicted that the h_{ref} bandwidth selection method would more realistically estimate California Condor home ranges as condors are a wide-ranging and highly mobile species, and the LSCV bandwidth selection method tends to select overly small bandwidth values when there is clustering in the data, even with large datasets, as is the case with the California Condor GPS-transmitter dataset (Silverman, 1986; Amstrup and others, 2004). California Condors routinely return to perch and roost at the same distinct locations throughout the annual cycle, and GPS location data for individual condors therefore contain numerous overlapping location points at these sites. The LSCV algorithm failed as a result of these overlapping data points; it failed to minimize the mean integrated squared error function during the fixed-kernel density estimation procedure because of discretization errors (that is, division by zero error). We attempted to overcome this obstacle and evaluate the LSCV bandwidth selection method by randomly shifting overlapping points (100–300 m) or deleting overlapping points prior to running the algorithm; however, the LSCV algorithm continued to fail after overlapping points were randomly shifted or deleted. We were unable to evaluate the LSCV method further; instead we used the h_{ref} smoothing parameter to estimate 99-percent fixed-kernel home ranges and UDs (n = 39) for individual condors (n = 21) and produced RCU estimates for all management units (n = 6) and ecoregions (n = 7) for each GPS-tagged condor annually (table 1, fig. 5, appendix A). We used HRT [Home Range Tools for ArcGIS (Rodgers and others, 2005)] to estimate h_{ref} (the smoothing parameter) and Hawth's Analysis Tools for ArcGIS (Beyer, 2004) to estimate the 99-percent fixed-kernel home range and UD for individual condors (grid cell size = 100 m). We calculated RCU estimates within each management unit and ecoregion using ArcMap 9.2 (Neatherlin and Marzluff, 2004; ESRI, 2007; Kertson and Marzluff, 2009).

We compared relative concentration of use (RCU) among all management units and ecoregions within condor annual home ranges using individual condors as the sampling unit in a population-level analysis. We also summed the total area of each management unit and ecoregion within condor home ranges to estimate occurrence so that selectivity could be viewed in the context of availability (Neatherlin and Marzluff, 2004). Although spatial autocorrelation arises through the use of a fixed-kernel procedure to construct the UD, by using individual condors as the sampling unit in a population-level model, we may ignore spatial autocorrelation in the individual locations because individual model coefficients are unbiased even when

autocorrelation is present (Liang and Zeger, 1986; McCullagh and Nelder, 1989; Aebischer and others, 1993; Neter and others, 1996; Erickson And others, 2001). We compared annual RCU estimates for the six management units (fig. 2) for seven California Condors that carried a GPS transmitter during 2008 and 2009 using a Wilcoxon signed rank test—a nonparametric test for paired data (Wilcoxon, 1945; SAS Institute, 2008).

California Condor Use of Management Units and Ecoregions by Year

2004–05

Both California Condors tracked during 2004–2005 concentrated use within the annual home range on the HOP management unit and in the SOUTH ecoregion (appendix A). Condor use in the SOUTH management unit generally was on or near several communication towers where field personnel documented condors airborne and roosting (U.S. Fish and Wildlife Service, 2010). Condor SB161 predominantly used the HOP management unit and to a lesser extent the SOUTH and SRTM ecoregions during 2004–05; however, its home range also overlapped the NTR and SYSM ecoregions and the TMV management unit, but these areas rarely were used (appendix A). Similarly, condor SB192 predominantly used the HOP management unit and surrounding ecoregions (NTR, SOUTH, SRTM, SYSM) during 2004–05; however, condor SB192 also used the CSA, TEJON, and TMV management units during both years (appendix A). The home range of condor SB192 also overlapped the WEST ecoregion during 2004–05, but this area rarely was used (appendix A).

2006

Two of three California Condors (SB021 and SB192) tracked in 2006 were paired, and the other individual (condor SB112) also attempted reproduction (table 1), but neither the condor pair nor condor SB112 successfully fledged offspring in 2006 (U.S. Fish and Wildlife Service, 2010). Space use within the annual home range was bimodal for the condor pair and was concentrated on the BC management unit in the north and the HOP management unit in the south, whereas adjacent management unit (WW) and ecoregions (SRTM, WEST) were used less frequently (figs. 6 and 7, appendix A). In contrast, the home range for condor SB112 did not overlap the BC management unit in 2006 (fig. 7, appendix A). Rather, condor SB112 concentrated use in the HOP management unit and the adjacent SRTM ecoregion (appendix A). All three condors tracked during 2006 used the SOUTH ecoregion generally on or near several communication towers where field personnel previously documented condors airborne and roosting (U.S. Fish and Wildlife Service, 2010).

2007

All five California Condors tracked during 2007 generally exhibited a bimodal UD (fig. 8, appendix A). Space use within the annual home range was concentrated on the BC and HOP management units, and intervening or adjacent management unit (WW) and ecoregions (NTR, SOUTH, SRTM, SYSM, WEST) were used less frequently (figs. 6 and 8, appendix A). The average likelihood of condor occurrence on the HOP and BC management units was 35 and 29 percent, respectively (fig. 8*A*) despite these management units comprising less than 1 (HOP) and less than 4 percent (BC) of the annual home range (fig. 8*B*). Although ecoregions adjacent to

HOP and BC were used relatively more frequently during 2007 compared to other ecoregions (for example, SRTM = 10 percent, figs. 6 and 8*A*); unlike HOP and BC management units, these ecoregions generally constituted a larger portion of the home range (for example, SRTM = 32 percent, fig. 8*B*). California Condor use of the SOUTH ecoregion in 2007 was concentrated on or near several communication towers where field personnel previously documented condors airborne and roosting (U.S. Fish and Wildlife Service, 2010).

2008

Overall, UD estimates indicated California Condors exhibited a multimodal distribution in 2008 (fig. 9, appendix A). Condor use within the annual home range was concentrated on the HOP management unit in the south, BC and WW management units in the northwest, and on CSA, TEJON, and TMV management units in the northeast (10 of 13 condors tracked during 2008, figs. 6 and 9, appendix A). The average likelihood of condor occurrence was highest in the BC (31 percent) and HOP (26 percent) management units (fig. 9*A*, appendix A) despite these management units comprising less than 3 (BC) and less than 1 percent (HOP) of the annual home range (fig. 9*B*). The WW management unit and four ecoregions (NTR, SYSM, SRTM, and WEST) also were within the home range of all 13 condors tracked during 2008 (figs. 6 and 9, appendix A). The average likelihood of condors using the WW management unit was 6 percent during 2008, and this management unit accounted for 7 percent of the annual home range. The average likelihood of condors using the four ecoregions used by all GPS-tagged condors in 2008 was similar to that of the WW management unit (average likelihood of use: NTR = 5 percent, SRTM = 8 percent, SYSM = 5 percent, WEST = 7 percent; fig. 9*A*); however, NTR and SRTM ecoregions constituted 3–4 times more of the annual home range than the WW management unit (fig. 9*B*). Most condors tracked during 2008 also used the CSA (77 percent, n = 10), TEJON (77 percent, n = 10), and TMV (85 percent, n = 11) management units (figs. 6 and 9; appendix A). Nearly all (92 percent) condor UD estimates for 2008 also included the SOUTH ecoregion (fig. 9, appendix A) where use was concentrated on or near several communication towers where field personnel previously documented condors airborne and roosting (U.S. Fish and Wildlife Service, 2010).

2009

Annual home range estimates for the 14 California Condors tracked during 2009 overlapped all management units and ecoregions (figs. 6 and 10, appendix A). California Condor UD estimates from 2009 indicated a multimodal distribution with use concentrated on HOP management unit in the south, BC and WW management units in the northwest, and on the CSA, TEJON, and TMV management units in the northeast (figs. 6 and 10, appendix A). The average likelihood of condor occurrence during 2009 was highest on the BC (21 percent), CSA (14 percent), and HOP (23 percent) management units and within the SRTM (9 percent) ecoregion (fig. 10*A*, appendix A). The HOP, BC, and CSA management units comprised less than 1, 2, and 4 percent of the annual home range, respectively; whereas the relative contribution of the SRTM ecoregion to the annual home range was 17 percent (fig. 10*B*). The average likelihood of condor use ranged from 4 to 6 percent for three other management units (TEJON, TMV, WW) and two ecoregions (SYSM, WEST), and these areas constituted between 2 and 11 percent of the annual home range (fig. 10). The average likelihood of occurrence for California Condors tracked during 2008 and 2009 (n = 7) was statistically different between years in three of the six management units (fig. 11). Wilcoxon signed rank tests indicated that California Condor use of

CSA and TEJON management units was higher in 2009 than in 2008; whereas, the likelihood of condors use of the BC management unit was lower in 2009 (fig. 11).

Analysis of California Condor Use of Management Units

The most striking result from our analysis was the recolonization of the CSA, TEJON, and TMV management units during 2008. During 2004–07, California Condor use within the annual home range generally was bimodal and use was concentrated on the BC and HOP management units, and the home range estimate for 2 (25 percent) California Condors overlapped the CSA, TEJON, and TMV management units (n = 8). However, 10 (77 percent) California Condor home ranges overlapped these management units during 2008 (n = 13), and by 2009, the home range of every GPS-tagged condor (n = 14) overlapped the CSA, TEJON, and TMV management units, and space use was multimodal within the home range and use was concentrated on the HOP management unit in the south, BC and WW management units in the northwest, and CSA, TEJON, and TMV management units in the northeast.

Extensive use of the BC and HOP management units during 2004–07 was likely related to condors being released from captivity and proffered food at these sites. California Condors previously were released from captivity on the HOP management unit (<2004), and the current release site in southern California is on the BC management unit (>2005, no new releases in southern California 2004–05; U.S. Fish and Wildlife Service, 2010). Food was previously proffered on the HOP management unit and currently is provided on the BC and WW management units (U.S. Fish and Wildlife Service, 2010). Although a steady supply of proffered food was historically (Wilbur and others, 1974; Wilbur, 1978; Meretsky and Snyder, 1992) and is currently available to condors in southern California, California Condor foraging patterns and feeding events are not necessarily limited by proffered food availability (Meretsky and Snyder, 1992). For example, California Condors have recolonized traditional foraging habitat (CSA, TEJON, and TMV) despite consistent food provisioning on the BC and WW management units. Non-proffered food (carcasses) availability in traditional condor foraging habitat most likely encouraged condor use of these areas and may maintain condor use despite consistent provisioning efforts elsewhere. The home range for six (75 percent) condors tracked during 2004–07 (n = 8) also included several communication towers where condors have been documented roosting in the SOUTH ecoregion, and to the northwest, the home range for condors SB161 and SB192 extended into Santa Barbara, San Luis Obispo, and Monterey Counties. Both California Condors tracked during 2004–05 were released in central California near Big Sur (condor SB161 in 1997, condor SB192 in 1998) before dispersing to southern California and first attempting reproduction in 2004 (U.S. Fish and Wildlife Service, 2010), which likely explains their use of these areas.

During 2008, California Condor space use within the annual home range generally shifted from a bimodal to a multimodal distribution and was concentrated on the HOP management unit in the south, BC and WW management units in the northwest, and CSA, TEJON, and TMV management units in the northeast (figs. 6 and 9). Home range and UD estimates during 2008 were similar in all but three cases (condors SB107, SB328, SB428). The home range for these three condors did not appreciably overlap the CSA, TEJON, and TMV management units. In one case, breeding condor SB107 exhibited a bimodal UD predominantly using the BC and HOP management units during 2008 (appendix A). Breeding did not likely limit use of the CSA, TEJON, and TMV management units by condor SB107, as five other condors tracked during 2008, including its mate (that is, condor SB161), fledged offspring and

exhibited a multimodal UD that included these management units (figs. 6 and 9, table 1, appendix A). In the second case, condor SB328 hatched in the wild in April 2004, but was brought into captivity in August 2004 because of a broken wing, and was not released into the wild again until October 2007 (U.S. Fish and Wildlife Service, 2010). Space use primarily was unimodal within the home range for condor SB328 during 2008, and use was focused on the BC and WW management units and NTR ecoregion, with other areas (HOP management unit and SRTM, SYSM, WEST ecoregions) used less frequently (appendix A). Lastly, condor SB428 hatched in 2007 and was the youngest condor tracked during 2008. Condor SB428 predominantly used the BC, HOP, and WW management units during 2008, and intervening or adjacent management units and ecoregions (WEST, NTR, SRTM) were used less frequently (appendix A). Although home range estimates for these three condors (SB328, SB428, SB107) did not appreciably overlap the CSA, TEJON, or TMV management units during 2008, the home range estimate for more than 75 percent of GPS-tagged California condors did overlap (figs. 6 and 9). Furthermore, by 2009 every GPS-tagged condor's home range (n = 14) overlapped the CSA, TEJON, TMV management units, including immature condor SB428.

During 2009, all California Condor home range and UD estimates indicated a multimodal distribution, and use generally was concentrated on the HOP management unit in the south, BC and WW management units in the northwest, and CSA, TEJON, and TMV management units in the northeast (figs. 6 and 10). California Condors initially recolonized the CSA, TEJON, and TMV management units in 2008 (figs. 6 and 9) and relative concentration of use of these management units continued to increase in 2009 (fig. 11). The CSA, TEJON, and TMV, management units historically were used by California Condors (Meretsky and Snyder, 1992), and portions of these management units were designated as critical habitat (fig. 1, U.S. Fish and Wildlife Service, 1976). Recolonization of historical foraging and roosting sites within the CSA, TEJON, and TMV management units reestablished traditional condor movement and foraging patterns in southern California, particularly for breeding condors. Prior to extirpation from the wild, California Condor movement patterns were analyzed in six foraging zones (dashed lines in figure 1, Meretsky and Snyder, 1992). Historically, California Condors used all these foraging zones during the annual cycle, with unpaired and immature condors exhibiting the broadest movement patterns, capable of moving between any two points within the species' range in a single day (Meretsky and Snyder, 1992). Breeding pairs in southern California typically did not forage more than 50–70 km from their nest site historically; however, breeding birds did forage over considerably longer distances (more than 150 km; Meretsky and Snyder, 1992). California Condors that historically nested near and to the east of Hooper Mountain NWR more frequently used the CSA, TEJON, and TMV management units (Tehachapi foraging zone of Meretsky and Snyder, 1992) during the breeding season compared to any other foraging area (fig. 1; Meretsky and Snyder, 1992). Reintroduced condors nesting on and near the HOP management unit predominantly used BC and HOP management units prior to 2008. Condor pairs near the HOP management unit routinely traveled to proffered food on the BC management unit before 2008 (55–66 km from nest sites). This foraging pattern, nesting near the HOP management unit and foraging on or near the BC management unit, did not match well with the foraging pattern exhibited by the historical population. Although adult condors were historically familiar with all major foraging zones used by the population, condors historically breeding near the HOP management unit most frequently foraged on and near the CSA, TEJON, and TMV management units (24–36 km from nest sites, Tehachapi foraging zone of Meretsky and Snyder, 1992). Prior movement analyses (Meretsky and Snyder, 1992) were conducted on the behavior of the remnant

population of California Condors (n = 23 individuals) and may not necessarily be indicative of condor movement patterns before the precipitous population decrease of the 20th century. However, Meretsky and Snyder's (1992) work is the only published research that consistently tracked individual California Condors prior to extirpation. Regardless, reintroduced California Condors have recolonized the CSA, TEJON, and TMV management units, and this behavior is consistent with that exhibited by the population prior to extirpation. Furthermore, California Condors use of the CSA, TEJON, and TMV management units will likely increase if condors recolonize their historical range to the northeast.

Nesting, foraging, and roosting habitat in the Sierra Nevada mountain range has not yet been recolonized; however, the CSA, TEJON, and TMV management units provide the only corridor (approximately 20 km wide) that permits condor movement between the northeastern and southern parts of the historical range (fig. 1). Historically, California Condors traveled through these management units and adjacent foothills and mountains surrounding the San Joaquin Valley, and reintroduced condors will most likely use this area to move between the northeastern and southern parts of the range given that a prior study reported that condors did not typically fly directly across the San Joaquin Valley (Meretsky and Snyder, 1992). As scavengers, California Condors must cope with a food supply that is spatially and temporally unpredictable, and maintaining familiarity with food availability throughout the foraging range is likely adaptive (Meretsky and Snyder, 1992). California Condors that travel widely, throughout their range, not only acquire greater information on food availability compared to conspecifics that forage over a more limited area, but wide-ranging condors also have the opportunity to acquire greater information on predator and competitor (black bear, *Ursus americanus*; coyote, *Canis latrans*; Golden Eagle, *Aquila chrysaetos*) densities throughout the range (Meretsky and Snyder, 1992). Incorporating prior information on food, predator, and competitor densities into foraging behavior increases the probability of locating food, decreases the amount of time required to locate food, and may reduce the probability of encountering both predator and competitor, all of which can impact survival and reproduction.

Overall, the data indicated that California Condors in southern California recolonized the CSA, TEJON, and TMV management units. Annual home range estimates generally did not include the CSA, TEJON and TMV management units during 2004–07, and space use within the annual home range was bimodal and was concentrated on HOP management unit in the south and BC and WW management units in the northwest. However, 10 of 13 California Condor home ranges overlapped these management units during 2008, and the home range of all 14 condors tracked in 2009 overlapped the CSA, TEJON, and TMV management units. Furthermore, space use within the annual home range generally was multimodal and was concentrated on the HOP management unit in the south, BC and WW management units in the northwest, and CSA, TEJON, and TMV management units in the northeast. Recolonization of the CSA, TEJON, and TMV management units reestablished traditional condor movement and foraging patterns in southern California and provides the travel corridor (approximately 20 km wide) for recolonization of the northeastern part of the species' historical range.

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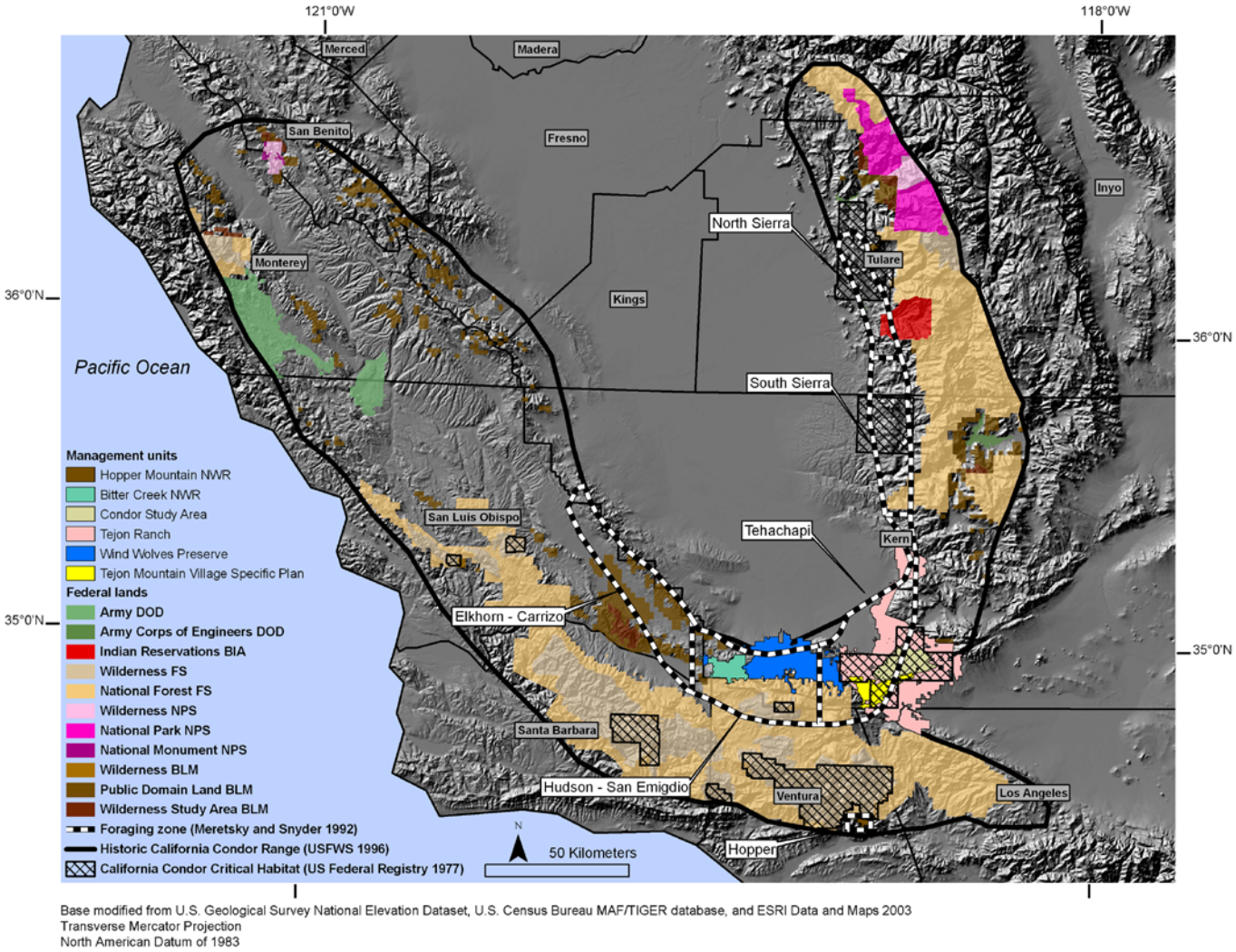

Figure 1. Map showing historical range of the California Condor (Recovery Plan for the California Condor, U.S. Fish and Wildlife Service 1996), management units, foraging zones, and Federal lands within the range, and designated Critical Habitat for the species (U.S. Fish and Wildlife Service, 1976).

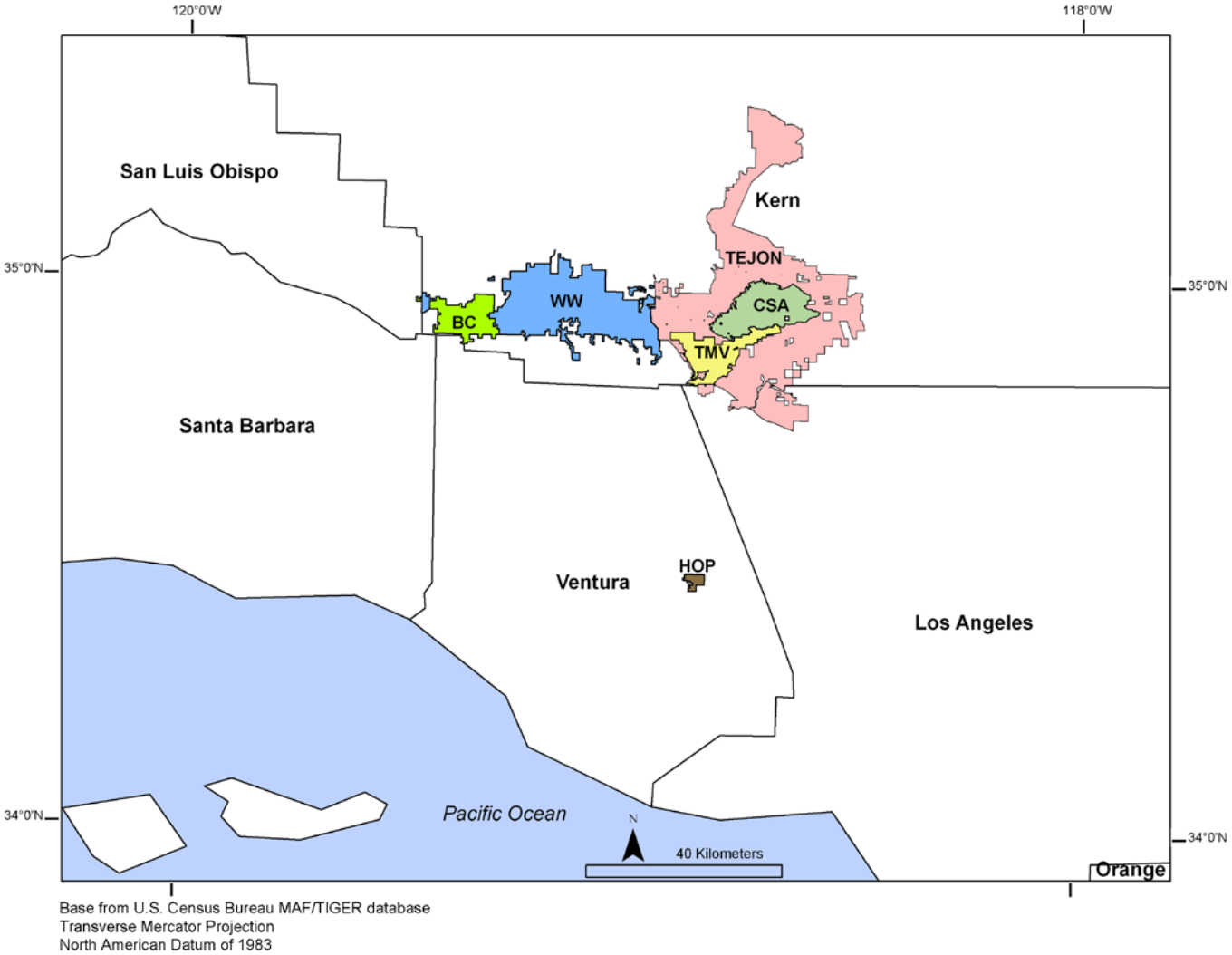

Figure 2. Map showing Geographic Information System data for six management units in southern California.

Abbreviations for management units:

BC	Bitter Creek National Wildlife Refuge
CSA	California Condor Study Area
HOP	Hopper Mountain National Wildlife Refuge
TEJON	Tejon Ranch excluding the TMV and the CSA
TMV	Tejon Mountain Village Specific Plan
WW	Wildlands Conservancy–Wind Wolves Preserve

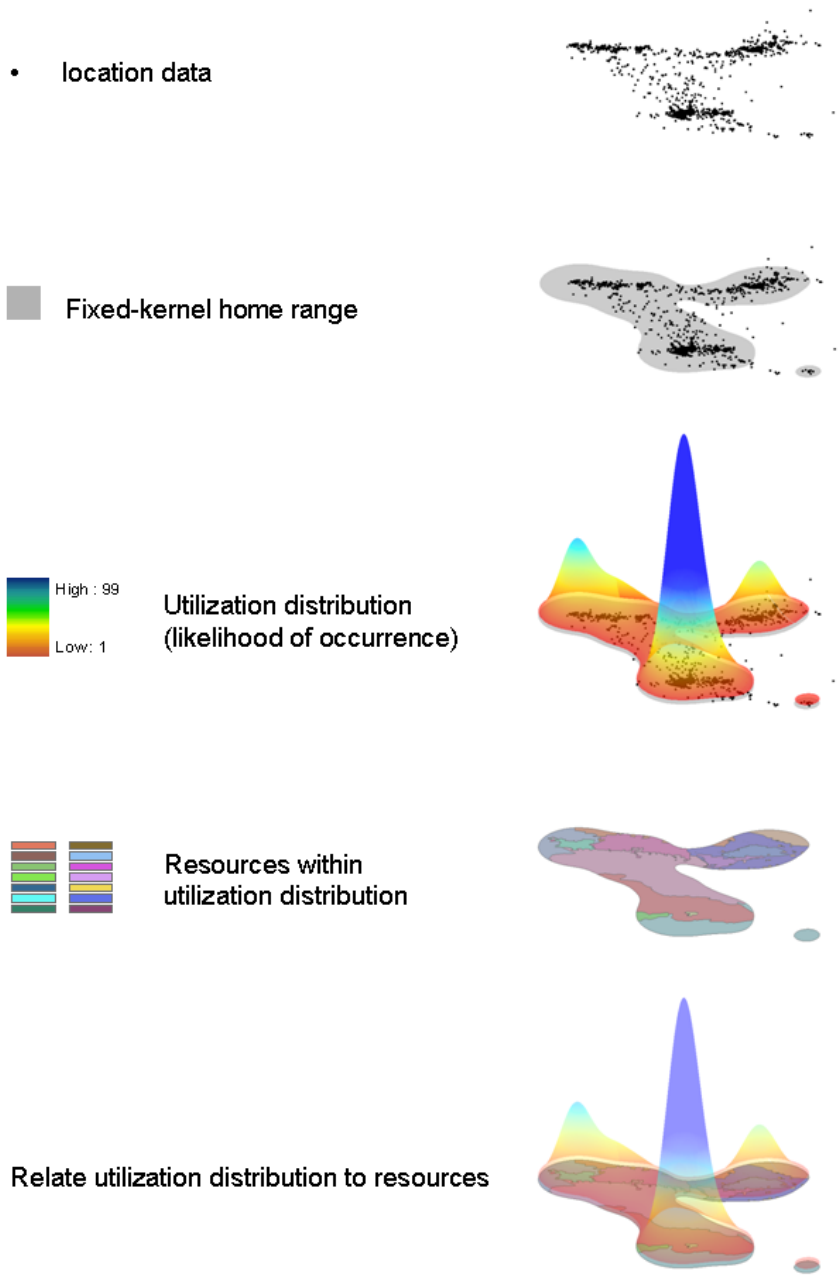

Figure 3. Illustrative example of methods used to quantify California Condor space use within the southern California population. First, the fixed-kernel home range and utilization distribution (UD) for each condor were estimated using Global Positioning System (GPS) location data. Greater heights of the UD indicate greater condor use, as inferred from regions of concentrated GPS locations. Then, resource attributes are measured within the area covered by the UD. Lastly, the height of the UD (a measure of relative use) is then related to resource attributes within each condor's home range.

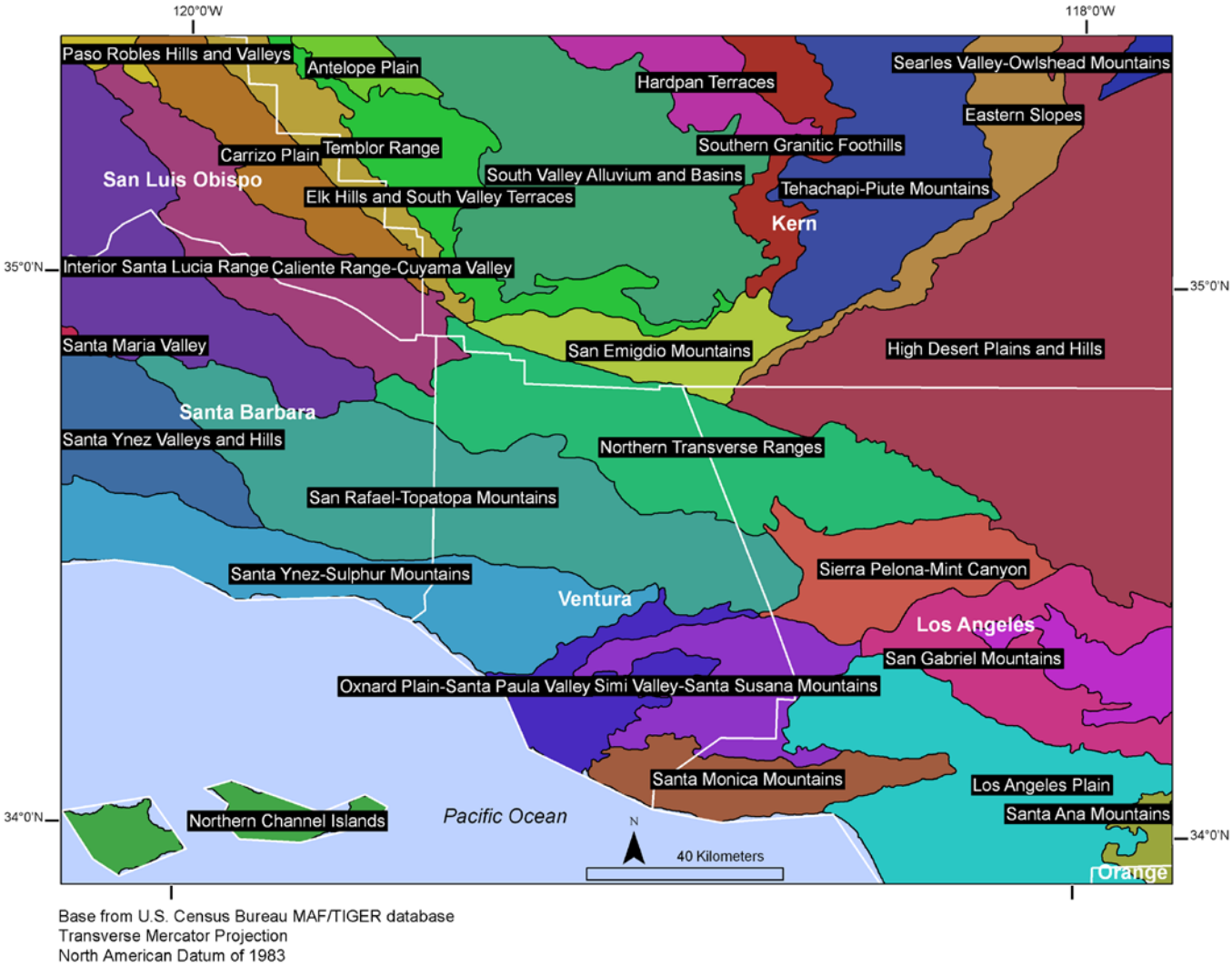

Figure 4. Map showing ecological subregion (n = 42) Geographic Information System data used to derive ecologically relevant areas of interest for spatial analyses of California Condors in the southern California population (USDA Forest Service, EcoregionsCalifornia07_3, Cleland and others, 2007).

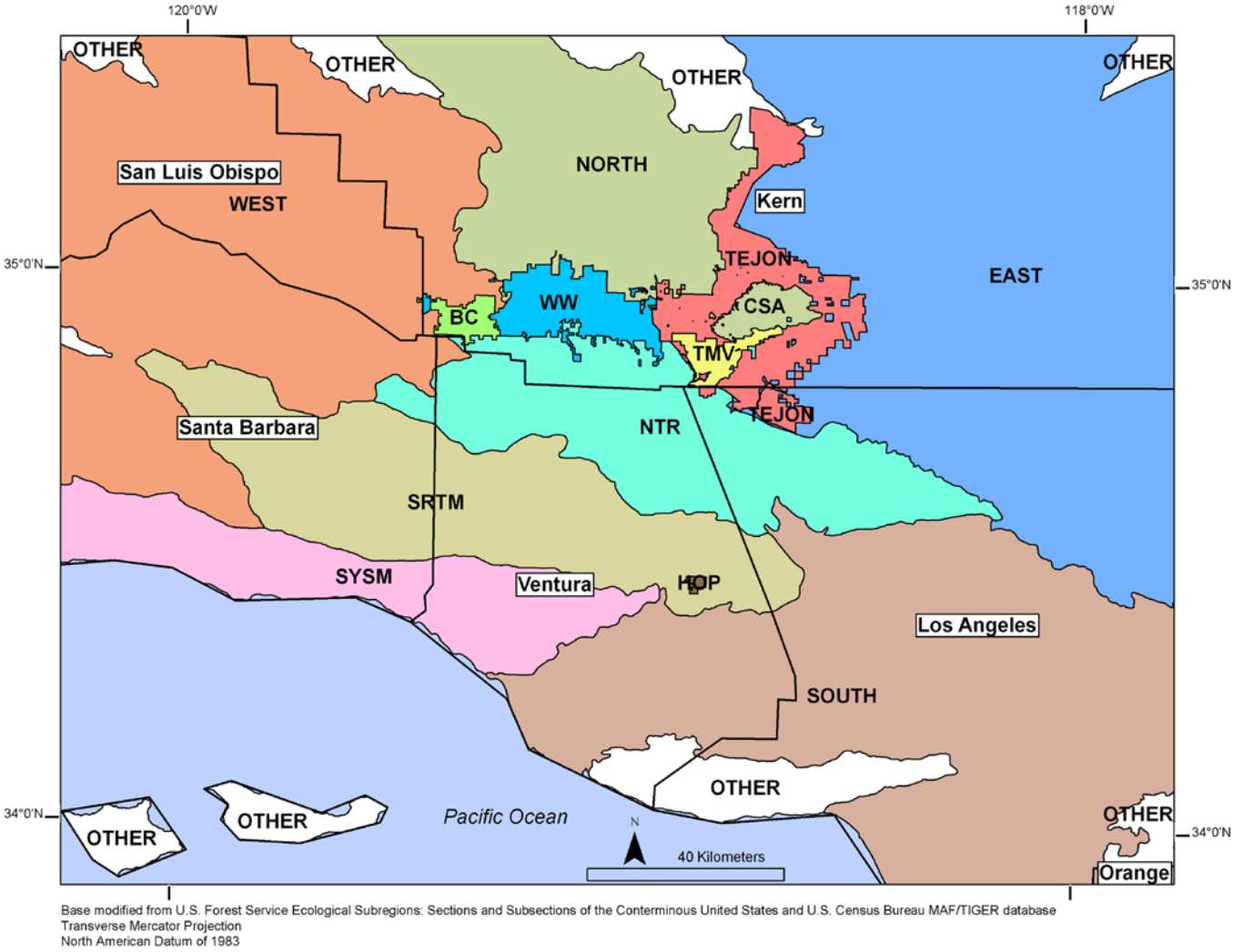

Figure 5. Map showing final Geographic Information System data layer depicting the six management units and seven ecoregions used in the spatial analyses of California Condors in the southern California population.

Abbreviations for management units:

BC	Bitter Creek National Wildlife Refuge
CSA	California Condor Study Area
HOP	Hopper Mountain National Wildlife Refuge
TEJON	Tejon Ranch excluding the TMV and the CSA
TMV	Tejon Mountain Village Specific Plan
WW	Wildlands Conservancy–Wind Wolves Preserve

Abbreviations for ecoregions:

EAST	Southern Granitic Foothills, Tehachapi Piute Mountains, Eastern Slopes, High Desert Plains and Hills, eastern portions of San Emigdio Mountains
NORTH	South Valley Alluvium and Basins, eastern portions of Elk Hills and South Valley Terraces;
NTR	Northern Transverse Ranges & western portions of San Emigdio Mountains
SOUTH	Oxnard Plain Santa Paula Valley, Simi Valley Santa Susana Mountains, Los Angeles Plain, San Gabriel Mountains, Upper San Gabriel Mountains, Sierra Pelona Mint Canyon
SRTM	San Rafael Topatopa Mountains
SYSM	Santa Ynez Sulphur Mountains
WEST	Interior Santa Lucia Range, Caliente Range, Cuyama Valley, Carrizo Plain, Temblor Range, Santa Ynez Valleys and Hills, western portions of Elk Hills and South Valley Terraces

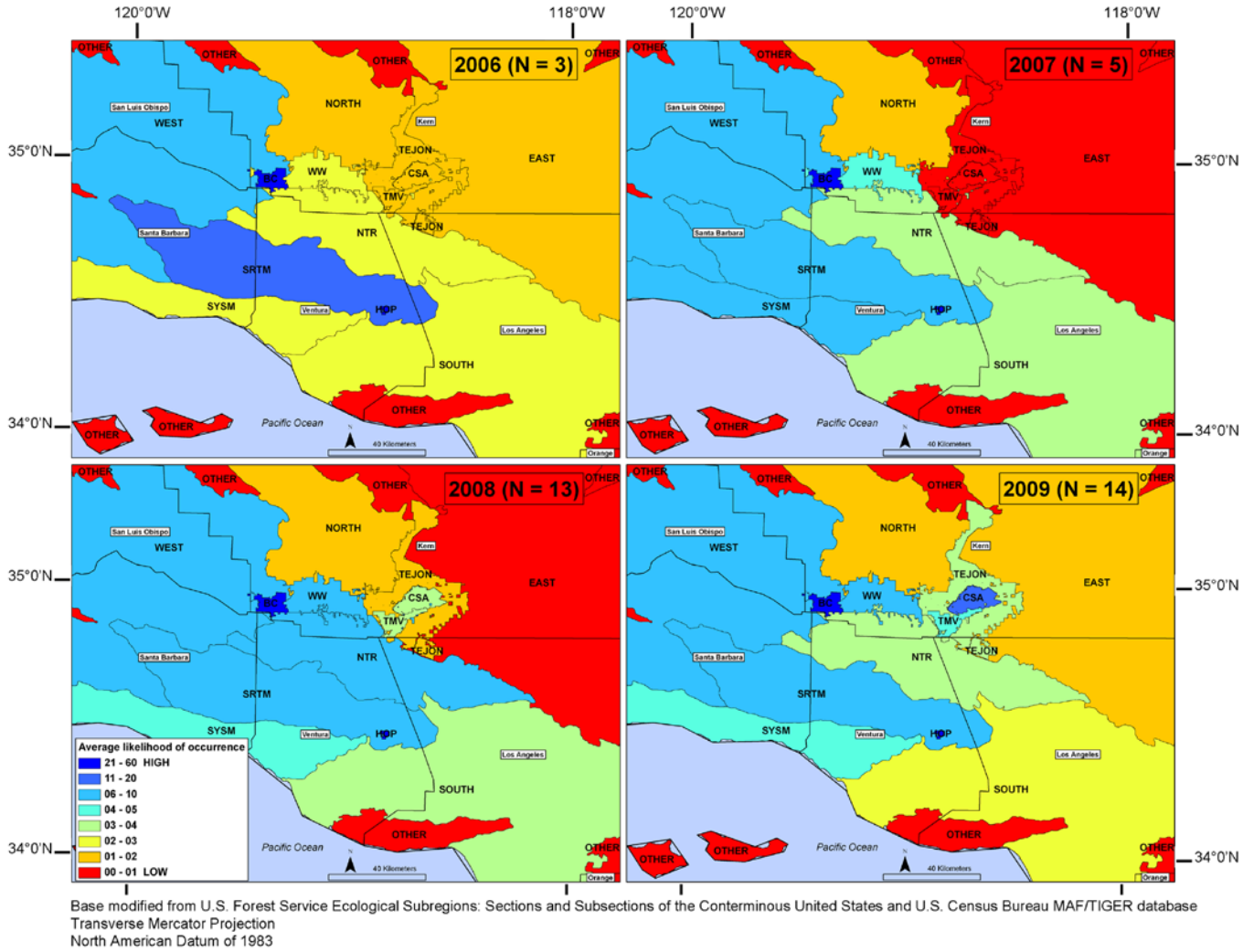

Figure 6. Maps showing average relative concentration of use of six management units and seven ecoregions within the annual (2006–09) home range of California Condors in the southern California population. Relative concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. See figure 5 for definitions of abbreviations for management units and ecoregions.

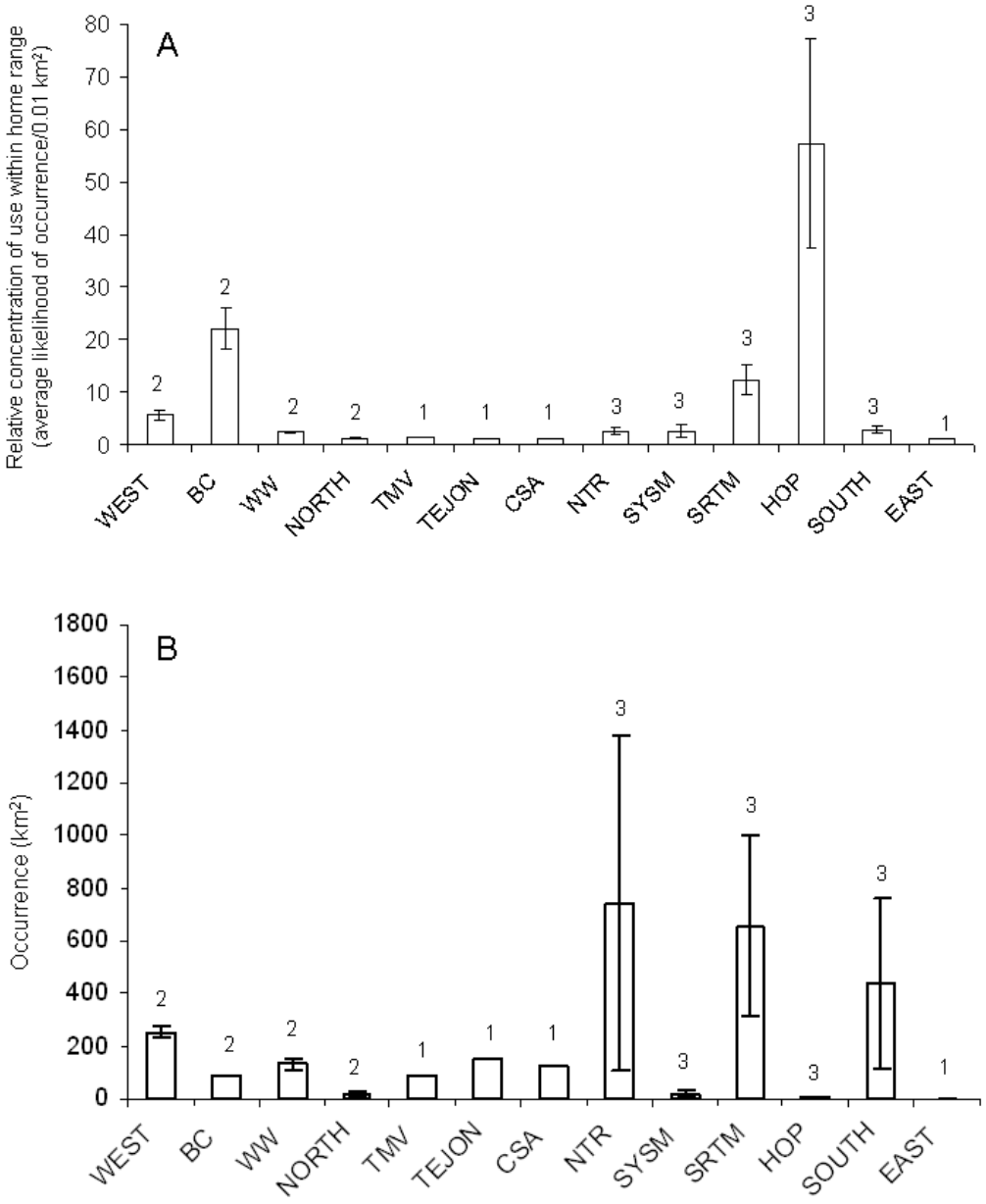

Figure 7. Bar graphs showing relative concentration of use of six management units and seven ecoregions within the annual home range of California Condors in the southern California population (panel A, 2006, n = 3). Concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. As resource availability influences this measure of selection (relative concentration of use), we also present mean occurrence of each management unit and ecoregion within the home range (panel B). Numbers above bars indicate sample size and error bars provide standard deviation. See figure 5 for definitions of abbreviations for management units and ecoregions.

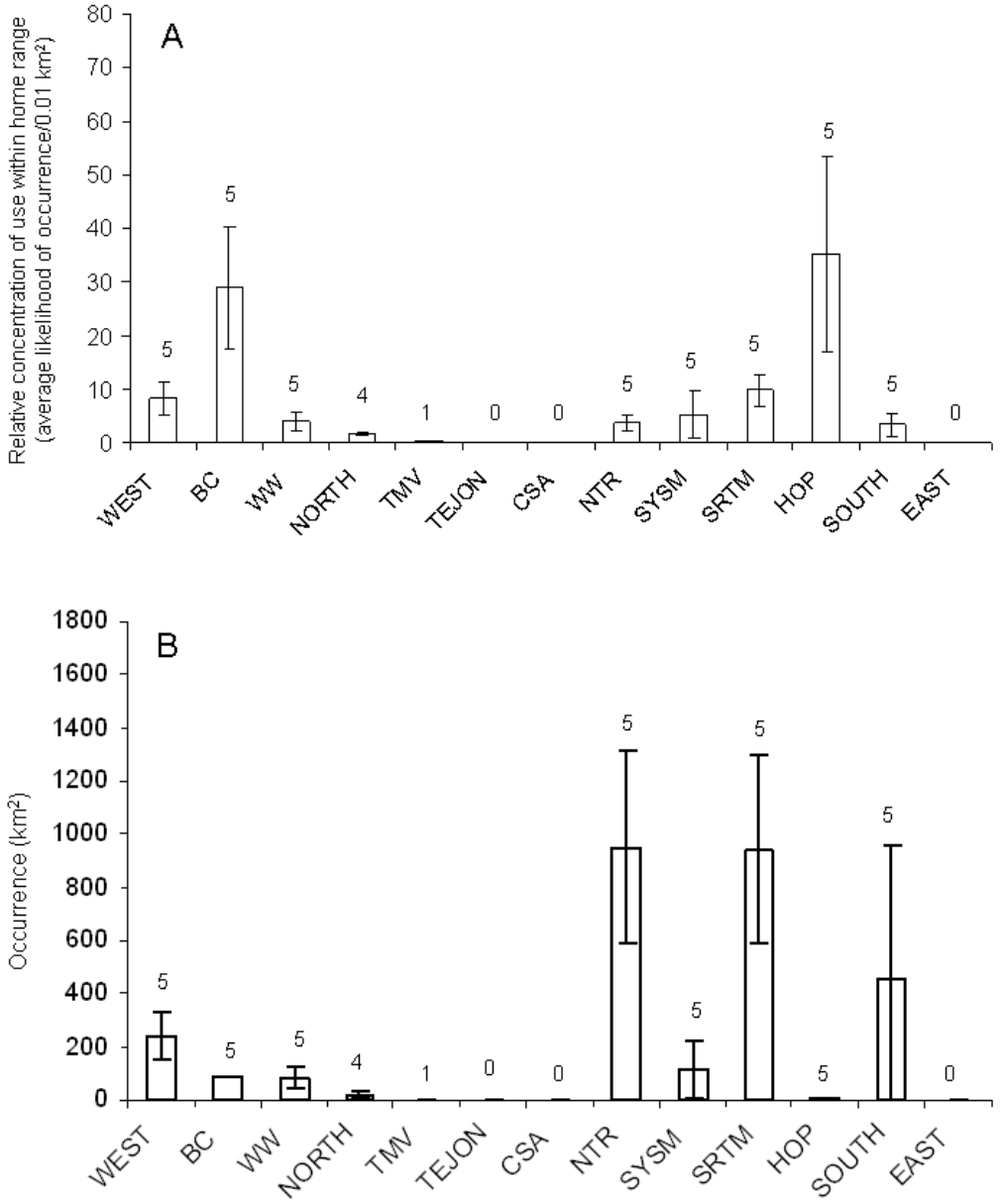

Figure 8. Bar graphs showing relative concentration of use of six management units and seven ecoregions within the annual home range of California Condors in the southern California population (panel A, 2007, n = 5). Concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. As resource availability influences this measure of selection (relative concentration of use), we also present mean occurrence of each management unit and ecoregion within the home range (panel B). Numbers above bars indicate sample size and error bars provide standard deviation. See figure 5 for definitions of abbreviations for management units and ecoregions.

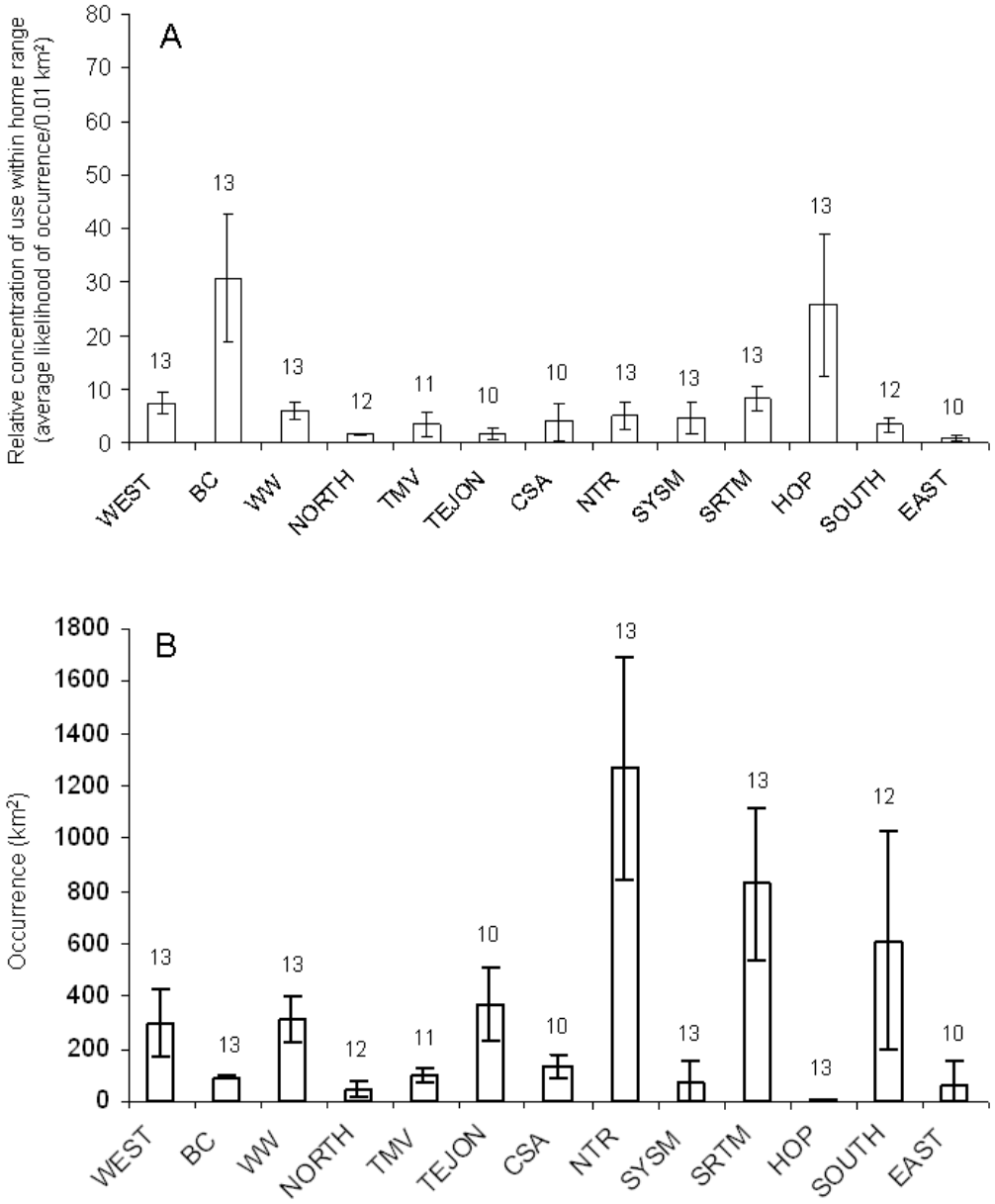

Figure 9. Bar graphs showing relative concentration of use of six management units and seven ecoregions within the annual home range of California Condors in the southern California population (panel A, 2008, n = 13). Concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. As resource availability influences this measure of selection (relative concentration of use), we also present mean occurrence of each management unit and ecoregion within the home range (panel B). Numbers above bars indicate sample size and error bars provide standard deviation. See figure 5 for definitions of abbreviations for management units and ecoregions.

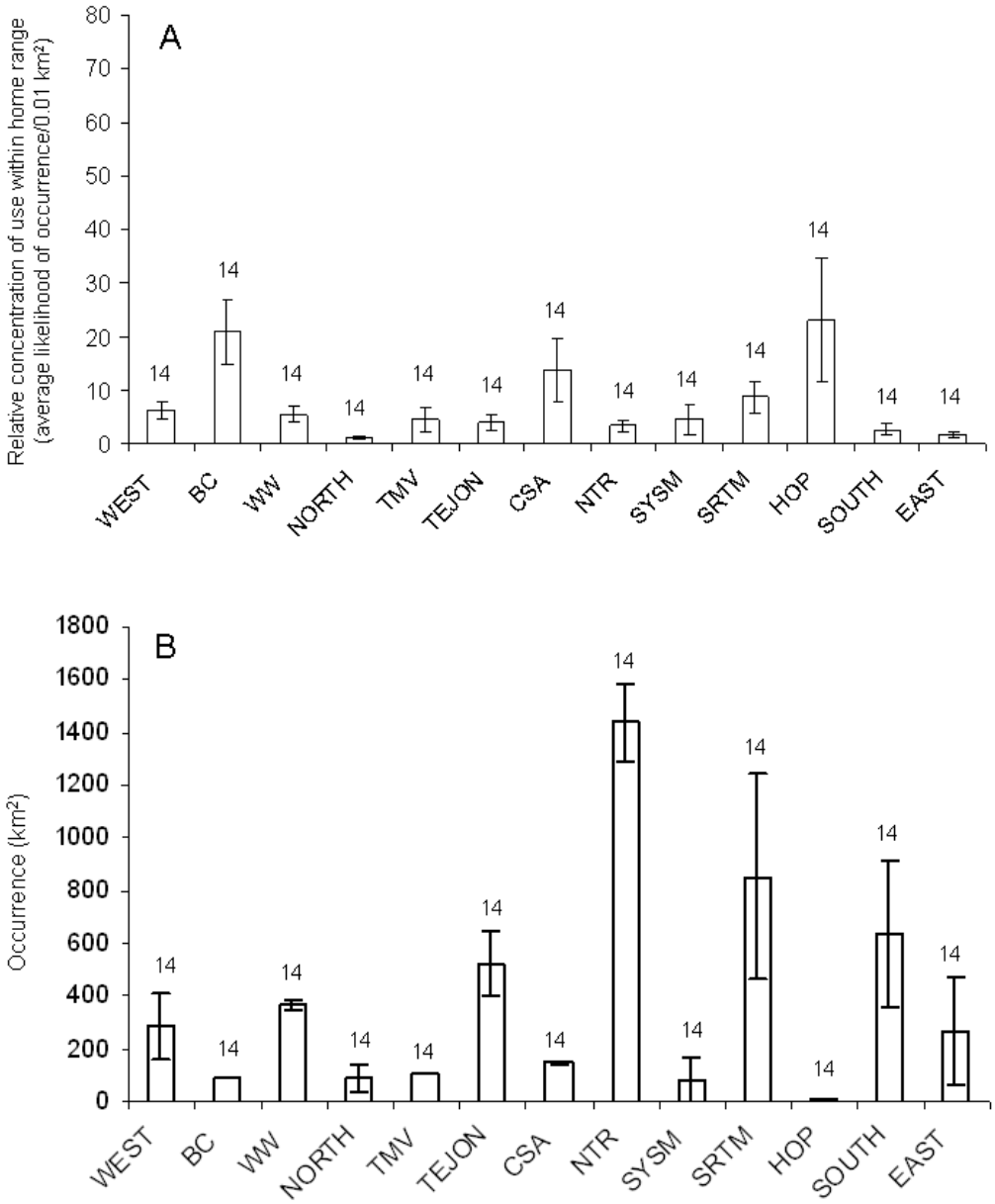

Figure 10. Bar graphs showing relative concentration of use of six management units and seven ecoregions within the annual home range of California Condors in the southern California population (panel A, 2009, n = 14). Concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. As resource availability influences this measure of selection (relative concentration of use), we also present mean occurrence of each management unit and ecoregion within the home range (panel B). Numbers above bars indicate sample size and error bars provide standard deviation. See figure 5 for definitions of abbreviations for management units and ecoregions.

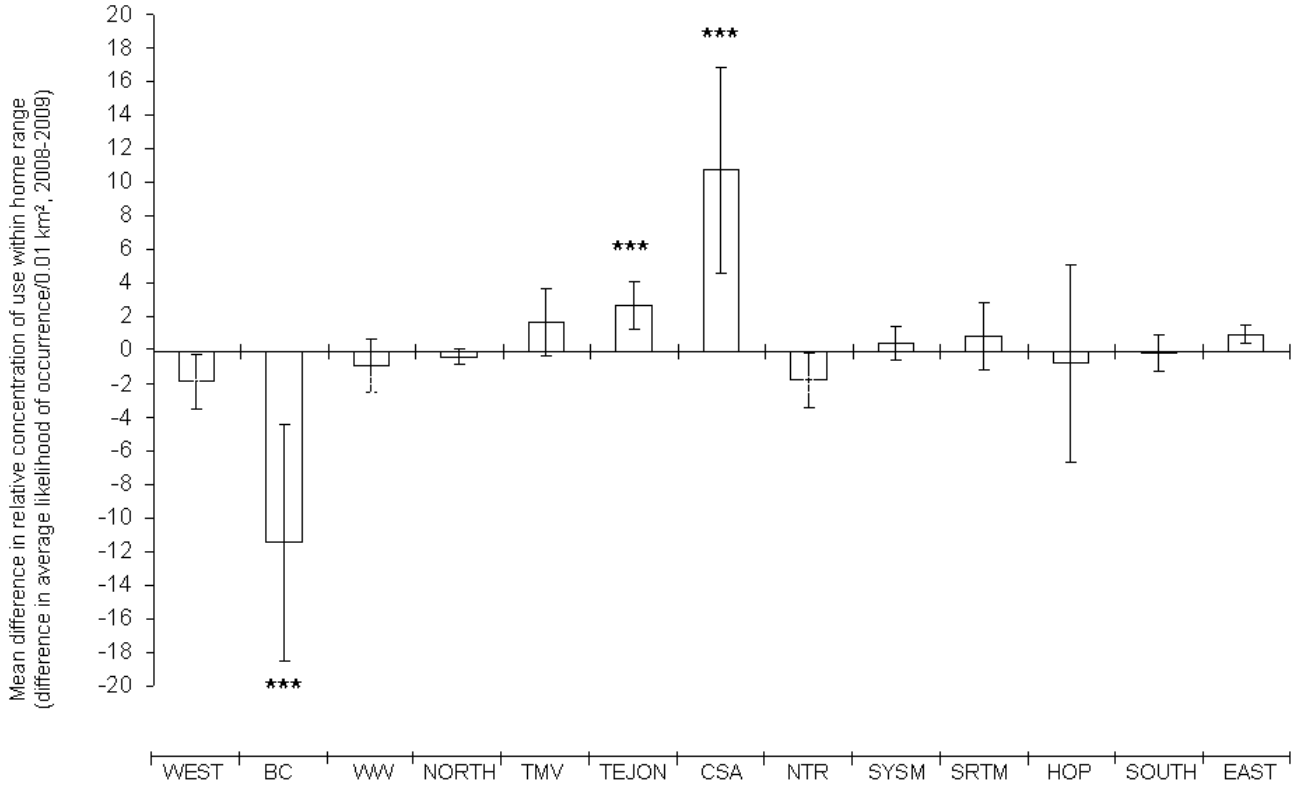

Figure 11. Bar graph showing mean difference in relative concentration of use of six management units and seven ecoregions within the annual home range of California Condors in the southern California population (n = 7 individuals; *** indicates significant Wilcoxon signed rank test, p = 0.02). Concentration of use is the ratio of a condors' total likelihood of occurrence in a specific management unit or ecoregion (volume of utilization distribution associated with the management unit or ecoregion) divided by total occurrence (availability) of that management unit or ecoregion in the home range. Error bars provide standard deviation. See figure 5 for definitions of abbreviations for management units and ecoregions.

Table 1. Global Positioning System (GPS) location data for 21 California Condors in southern California.

[Studbook No. = individual bird ID. The number of GPS locations collected annually for each condor is provided in yearly columns (2004–09) and the length of time (months) each condor carried a GPS transmitter is given in parentheses. Data from breeding condors are in ***bold***]

Studbook No.	Sex	Hatch year	Year					
			2004	2005	2006	2007	2008	2009
021	Male	1980			**1,780 (12)**			**2527 (10.5)**
079	Female	1992				2,657 (6)	**3,123 (10)**	**3,963 (12)**
107	Male	1994				**3,499 (10)**	**3,706 (12)**	**3,729 (12)**
112	Female	1994			**1,155 (6)**			
156	Female	1997					3,996 (12)	
161	Female	1997	**1,522 (6)**	640 (9)			**3,331 (10)**	**3,696 (12)**
180	Female	1998						4,544 (12)
192	Female	1998	**1,807 (6)**	**3,109 (12)**	**4,869 (12)**	**3,096 (10)**	4,156 (11)	**3,843 (12)**
213	Male	2000				3,607 (10)	4,137 (12)	
214	Female	2000					**3,080 (10)**	
237	Male	2001					**3,029 (10)**	4,033 (12)
247	Male	2001					**3,581 (11)**	**4,331 (12)**
255	Female	2001						**2,253 (9)**
262	Male	2001						3,224 (8.5)
289	Female	2002					**3,147 (9.5)**	
326	Male	2004						3,857 (10)
328	Male	2004					4,767 (11)	
369	Male	2005						4,481 (12)
412	Male	2006				2,174 (7)	4,179 (10.5)	
428	Female	2007					2,748 (7)	4,545 (12)
462	Male	2008						2,010 (6)
Total females			2	2	2	2	7	6
Breeding females			2	1	2	1	4	4
Total males			0	0	1	3	6	8
Breeding males			0	0	1	1	3	3
Total condors			2	2	3	5	13	14

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Appendix A.—Analysis of California Condor (*Gymnogyps californianus)* Use of Six Management Units Using Location Data from Global Positioning System Transmitters, Southern California, 2004–09—Initial Report

Utilization distribution estimates (n = 39) for 21 California Condors from the southern California population (2004–09). Individual condor identifications and year are indicated on each map in the upper right corner in white lettering. California Condor Global Positioning System transmitter data (127,931 locations) were used to estimate the utilization distribution (that is, probability density function) for individual California Condors within the 99-percent fixed-kernel estimate of their annual home range (Worton, 1987, 1989, smoothing parameter = h_{ref}, grid cell size = 100 m). The utilization distribution of an individual, or population of animals, can be used to estimate the probability and intensity of use for specific habitats or sites within an area of interest (for example, home range) as a function of relocation points (Van Winkle, 1975; Marzluff and others, 2001, 2004). HRT: Home Range Tools for ArcGIS (Rodgers and others, 2005) was used to estimate h_{ref} (the smoothing parameter) and Hawth's Analysis Tools for ArcGIS (Beyer, 2004) was used to estimate the 99-percent fixed-kernel home range and utilization distribution for individual condors (ESRI, 2007).

Abbreviations for management units:

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TMV	Tejon Mountain Village Specific Plan
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Abbreviations for ecoregions:

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SOUTH	Oxnard Plain Santa Paula Valley, Simi Valley Santa Susana Mountains, Los Angeles Plain, San Gabriel Mountains, Upper San Gabriel Mountains, Sierra Pelona Mint Canyon
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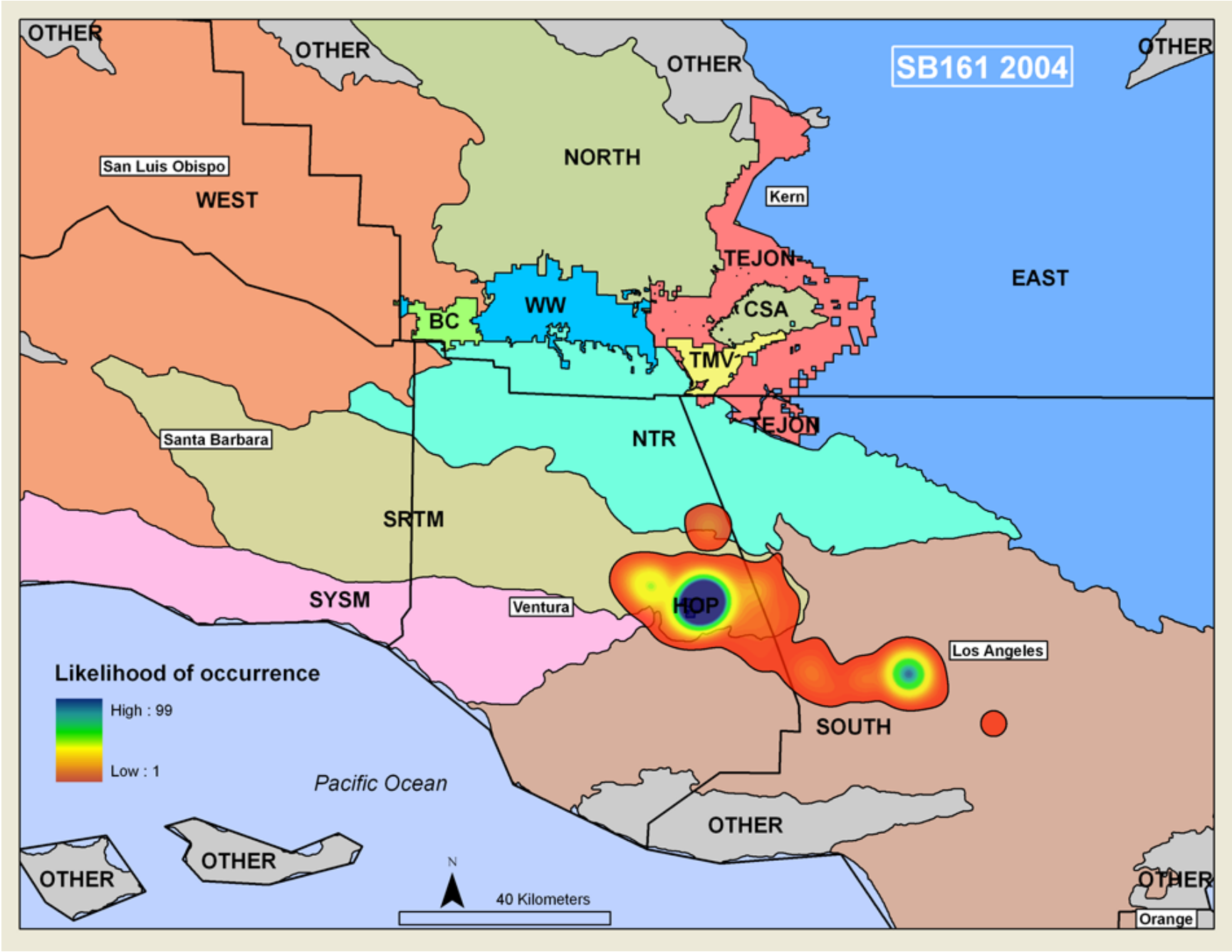
WEST	Interior Santa Lucia Range, Caliente Range, Cuyama Valley, Carrizo Plain, Temblor Range, Santa Ynez Valleys and Hills, western portions of Elk Hills and South Valley Terraces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Likelihood of occurrence
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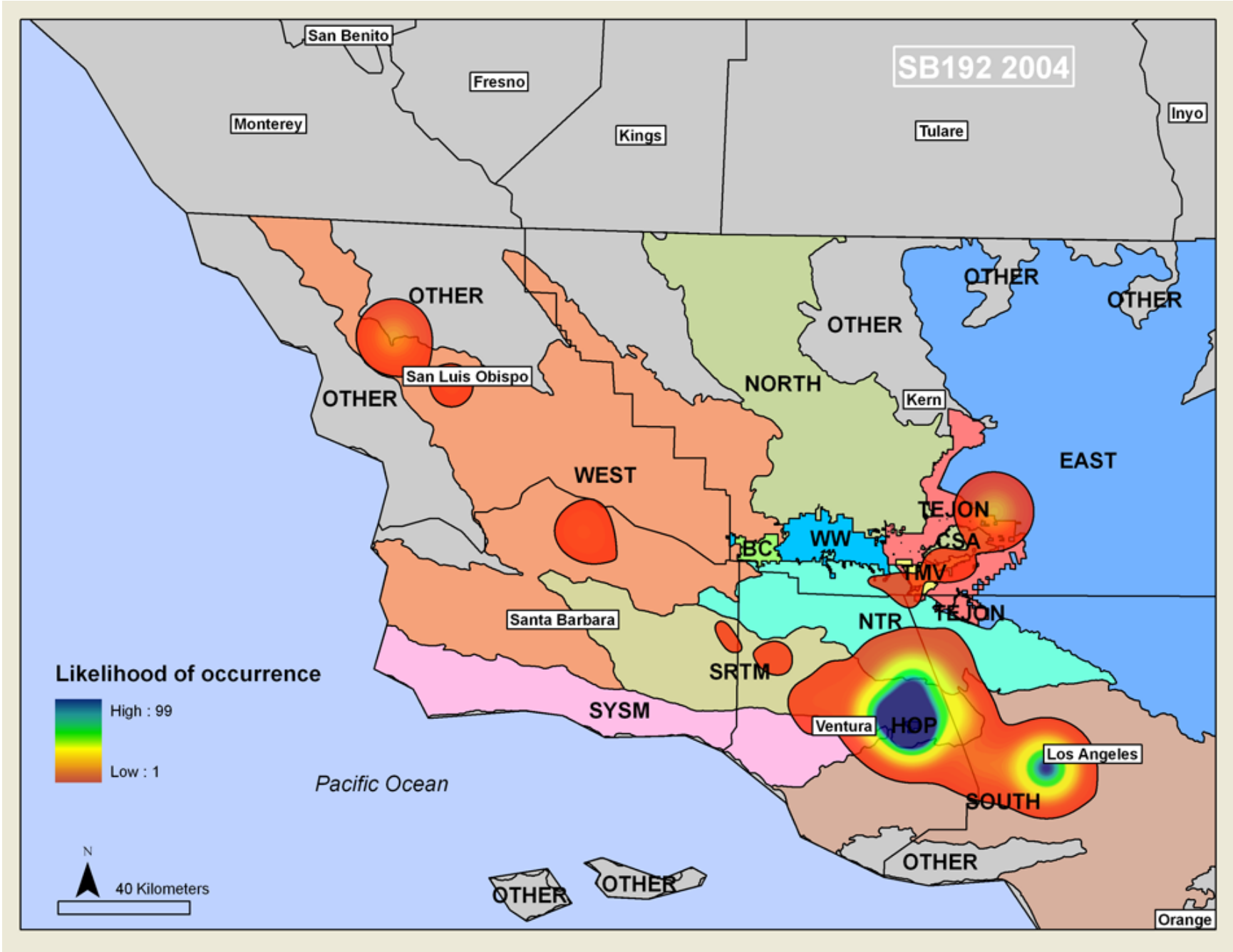
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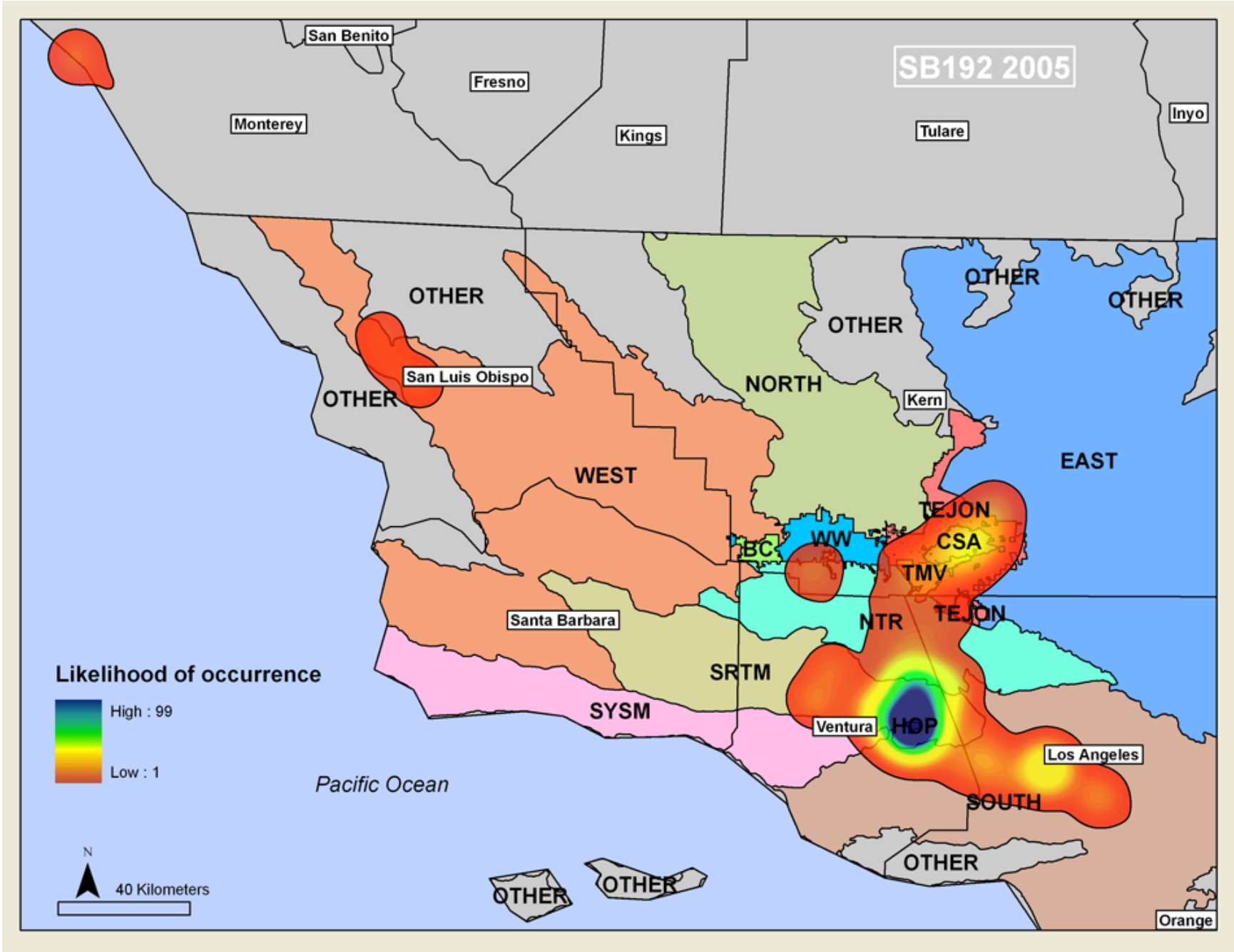
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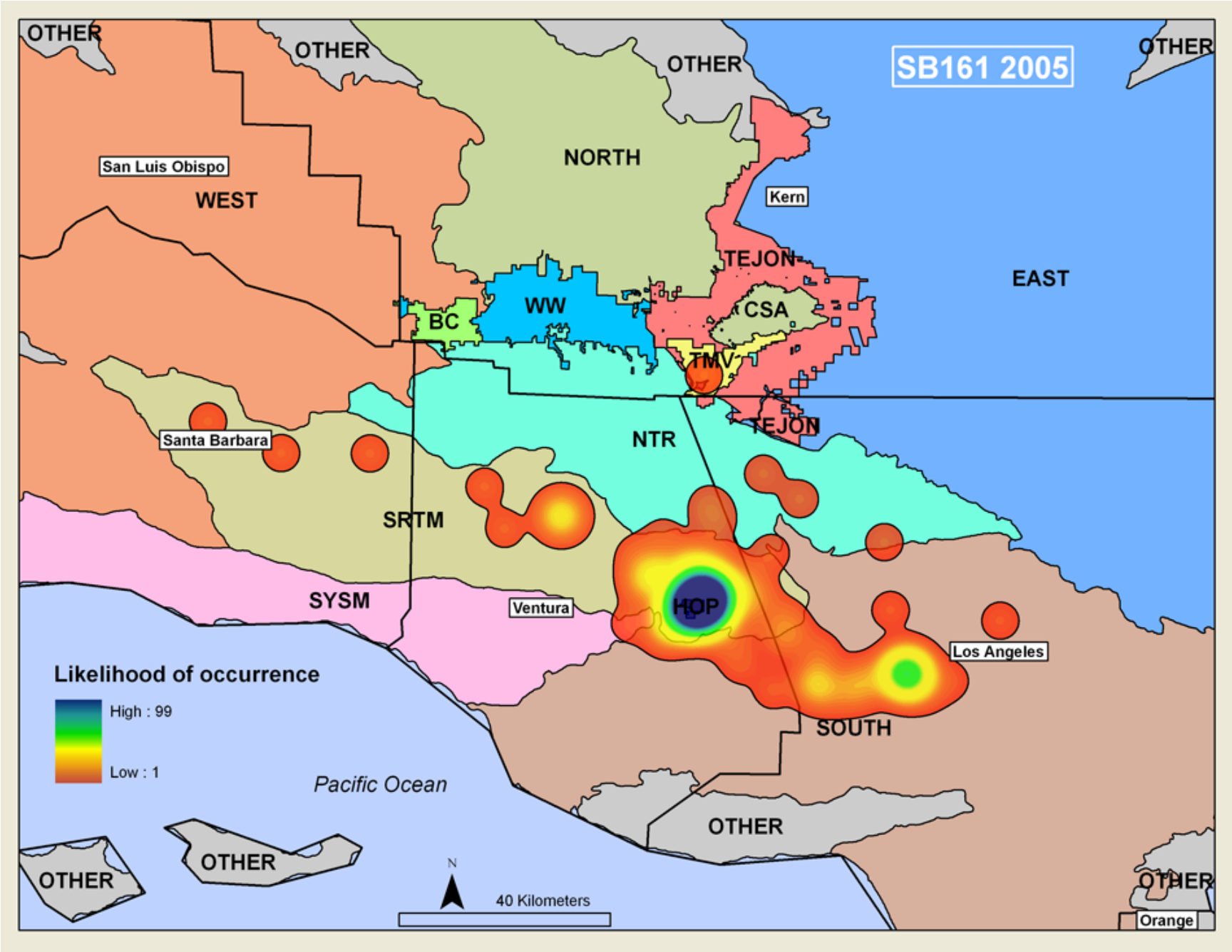
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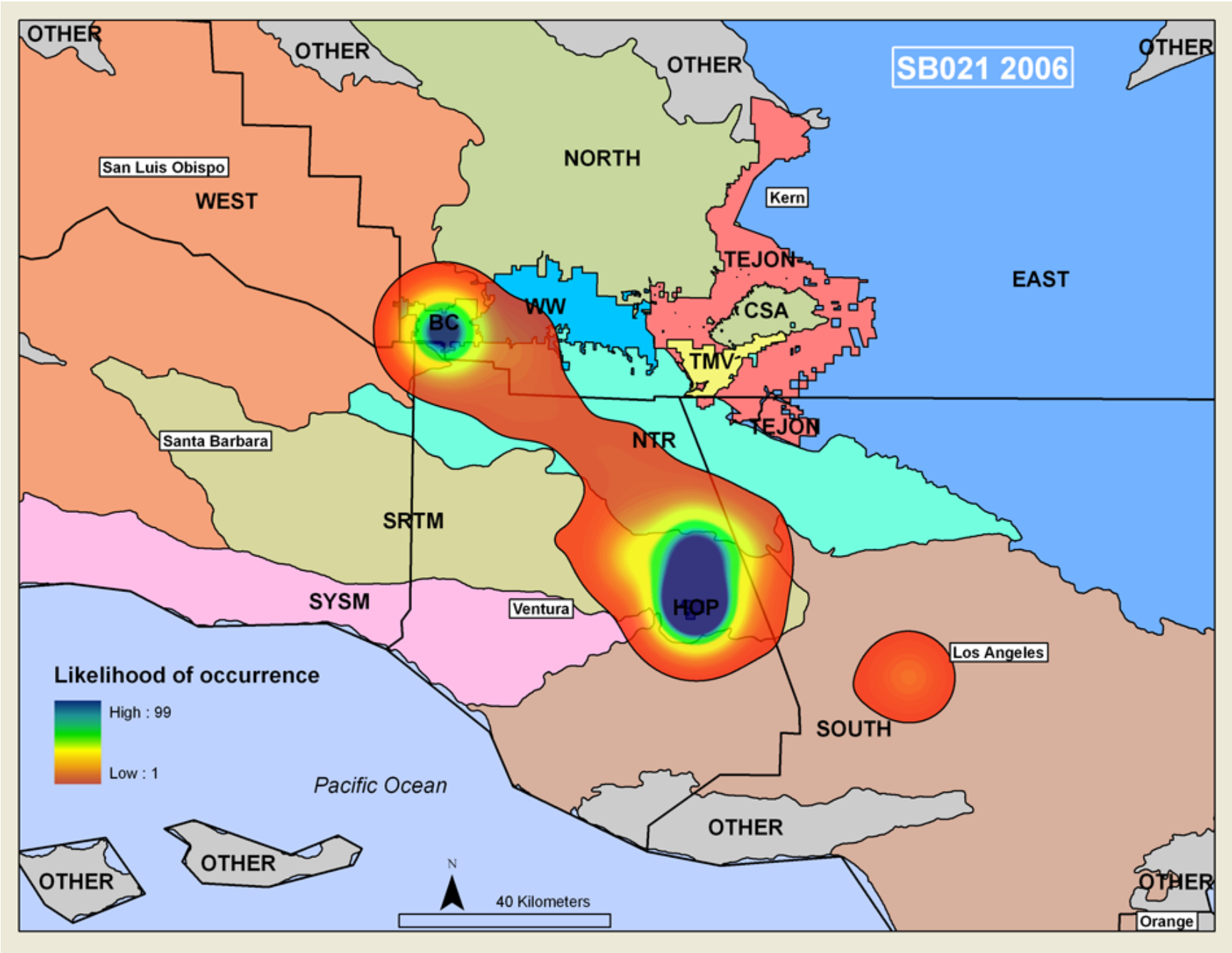
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Likelihood of occurrence
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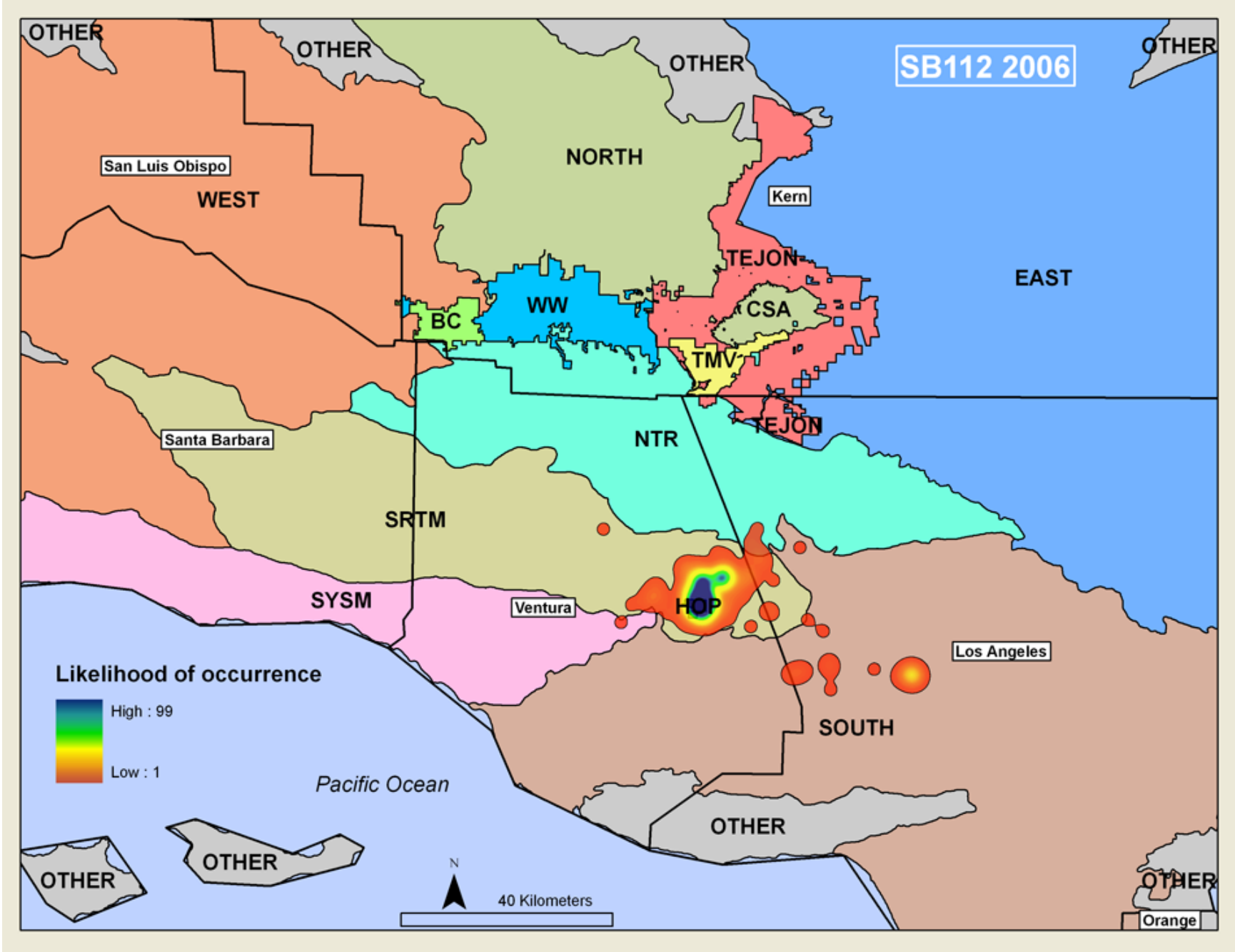
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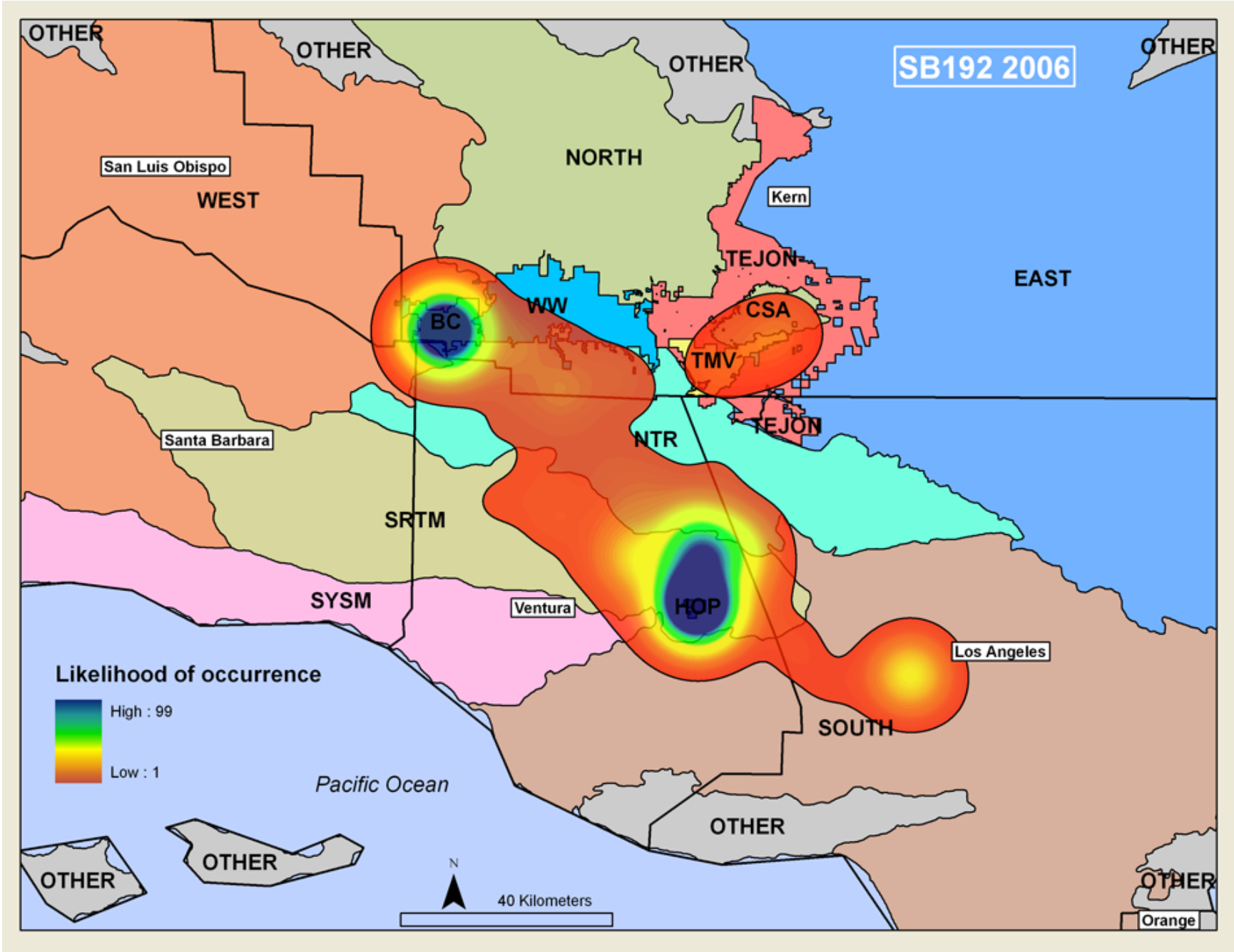
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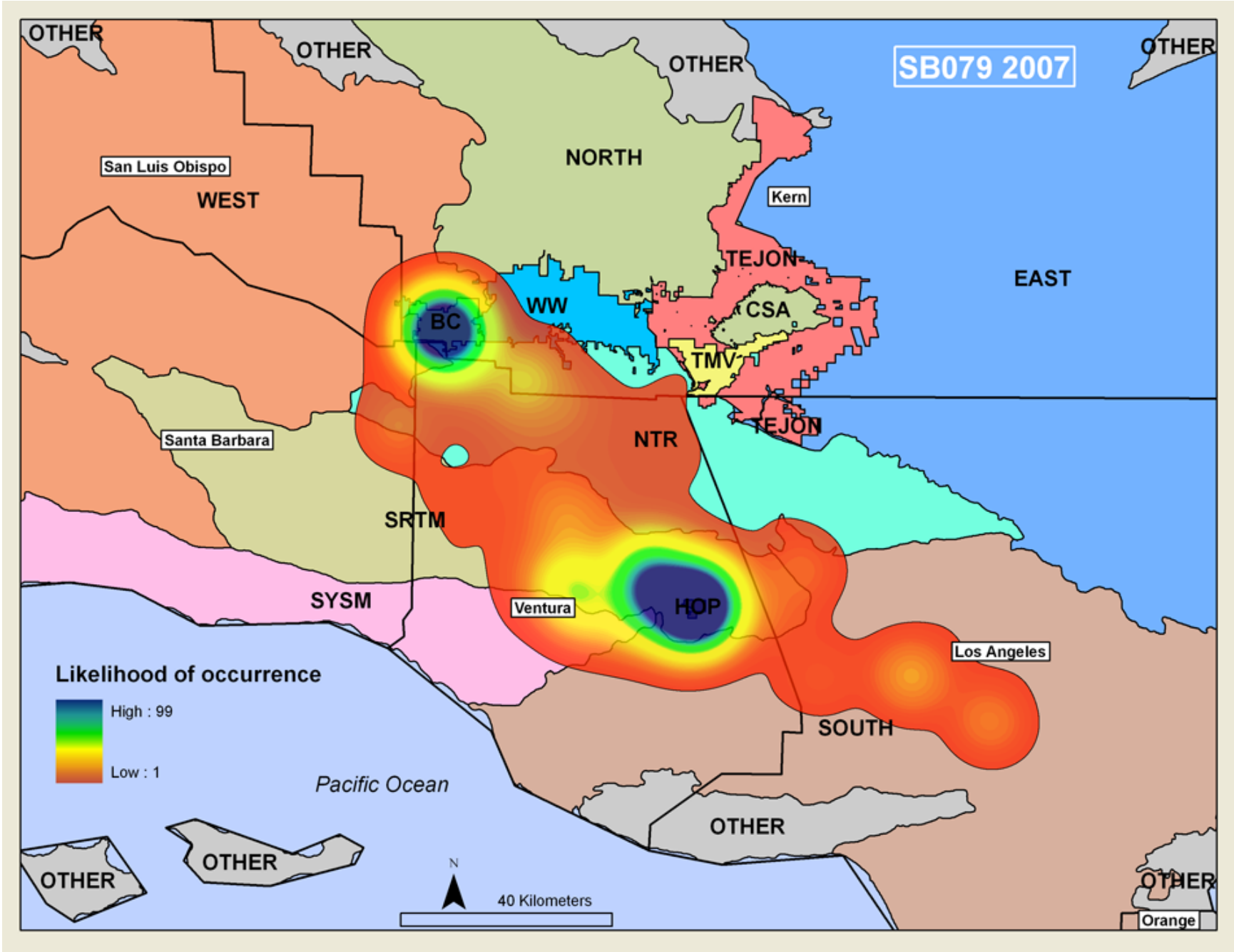
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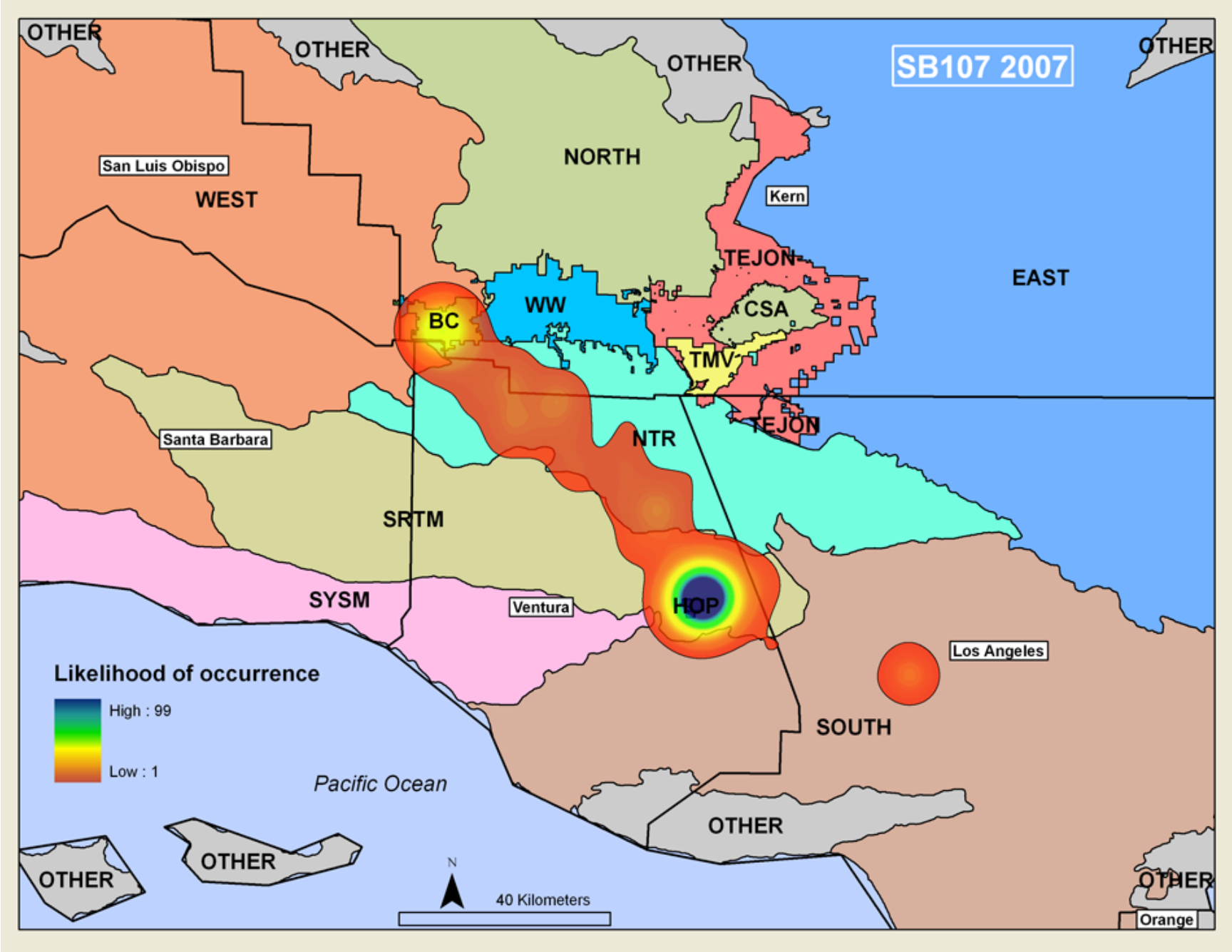
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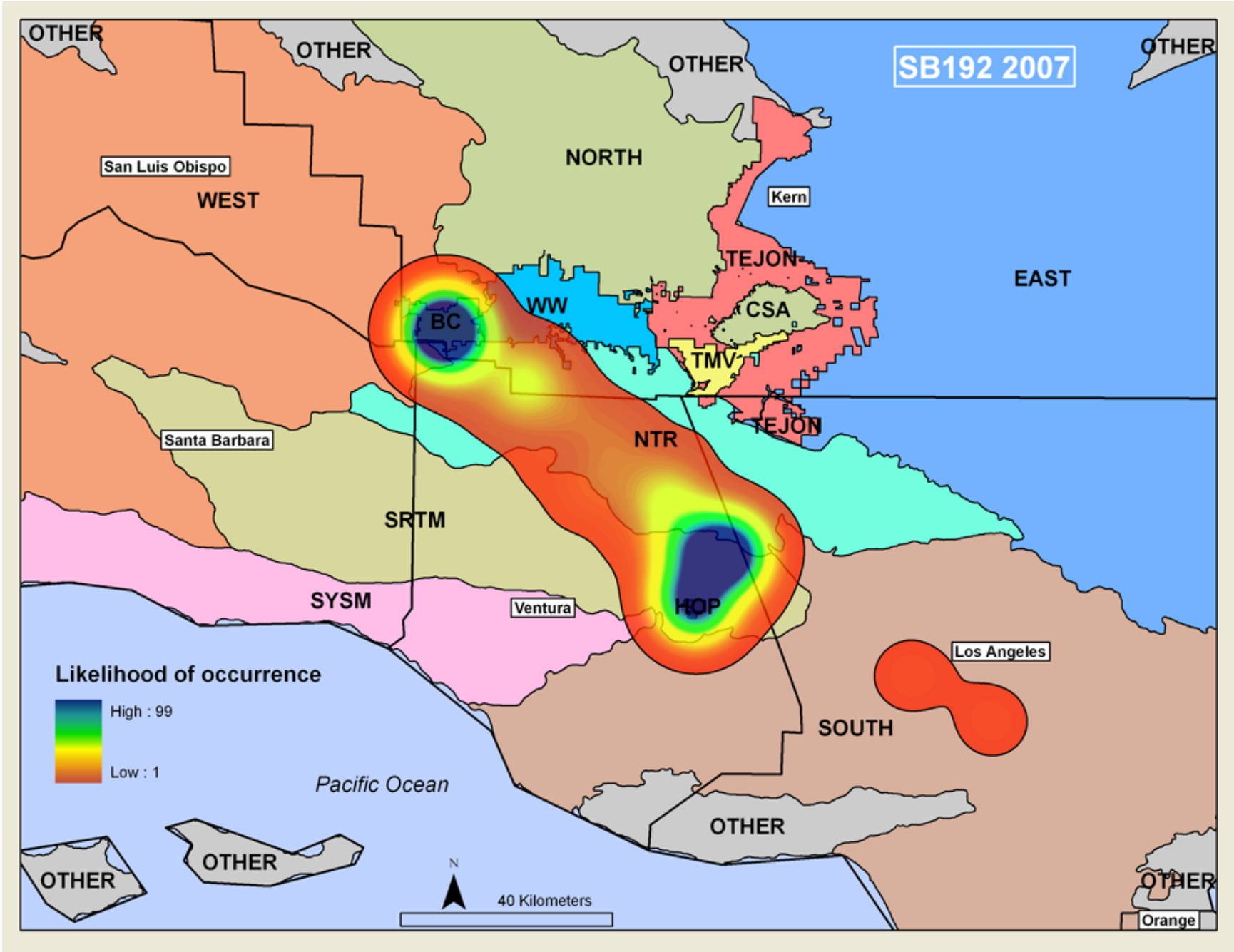
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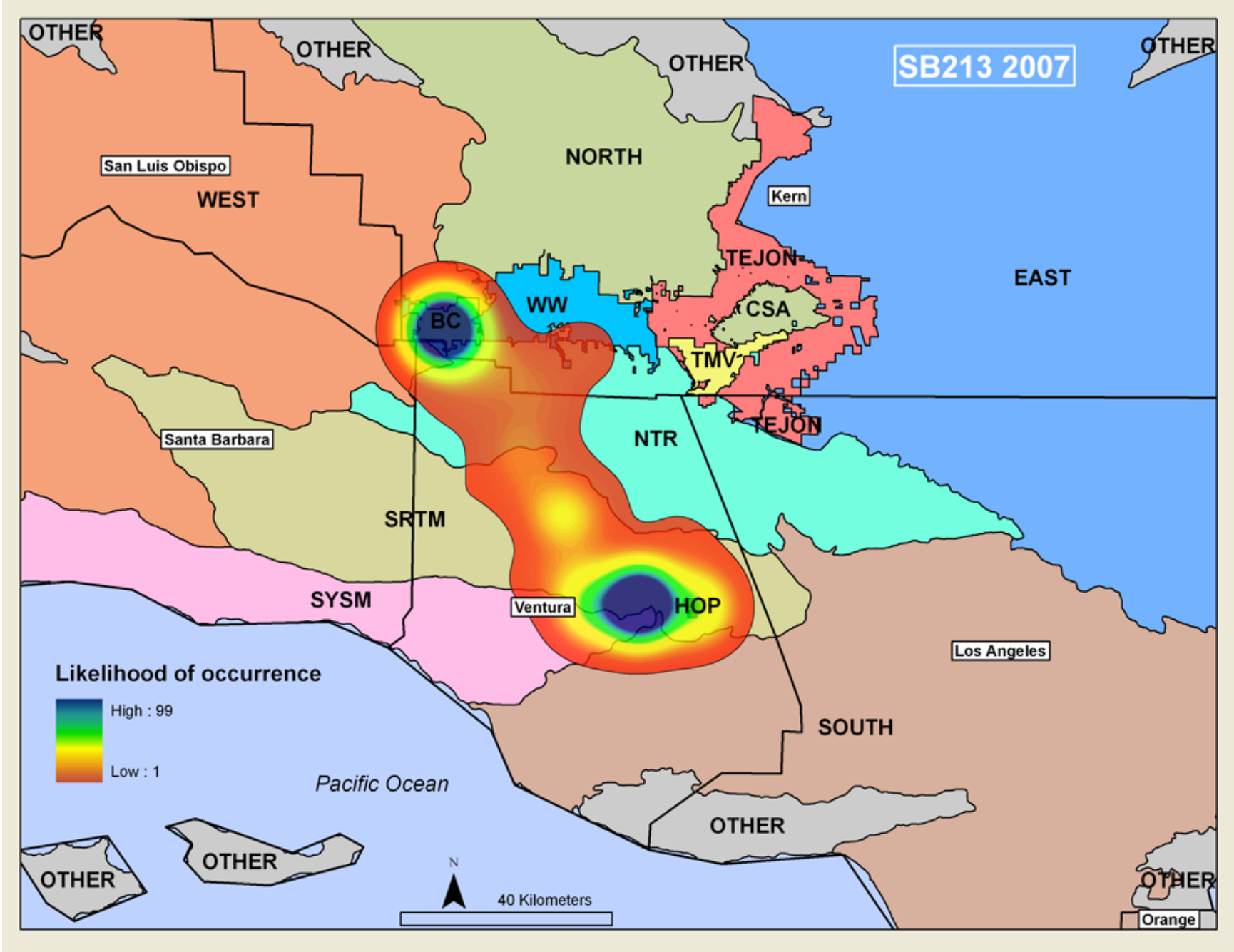
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NTR
Santa Barbara
SRTM
SYSM
Ventura
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Low : 1
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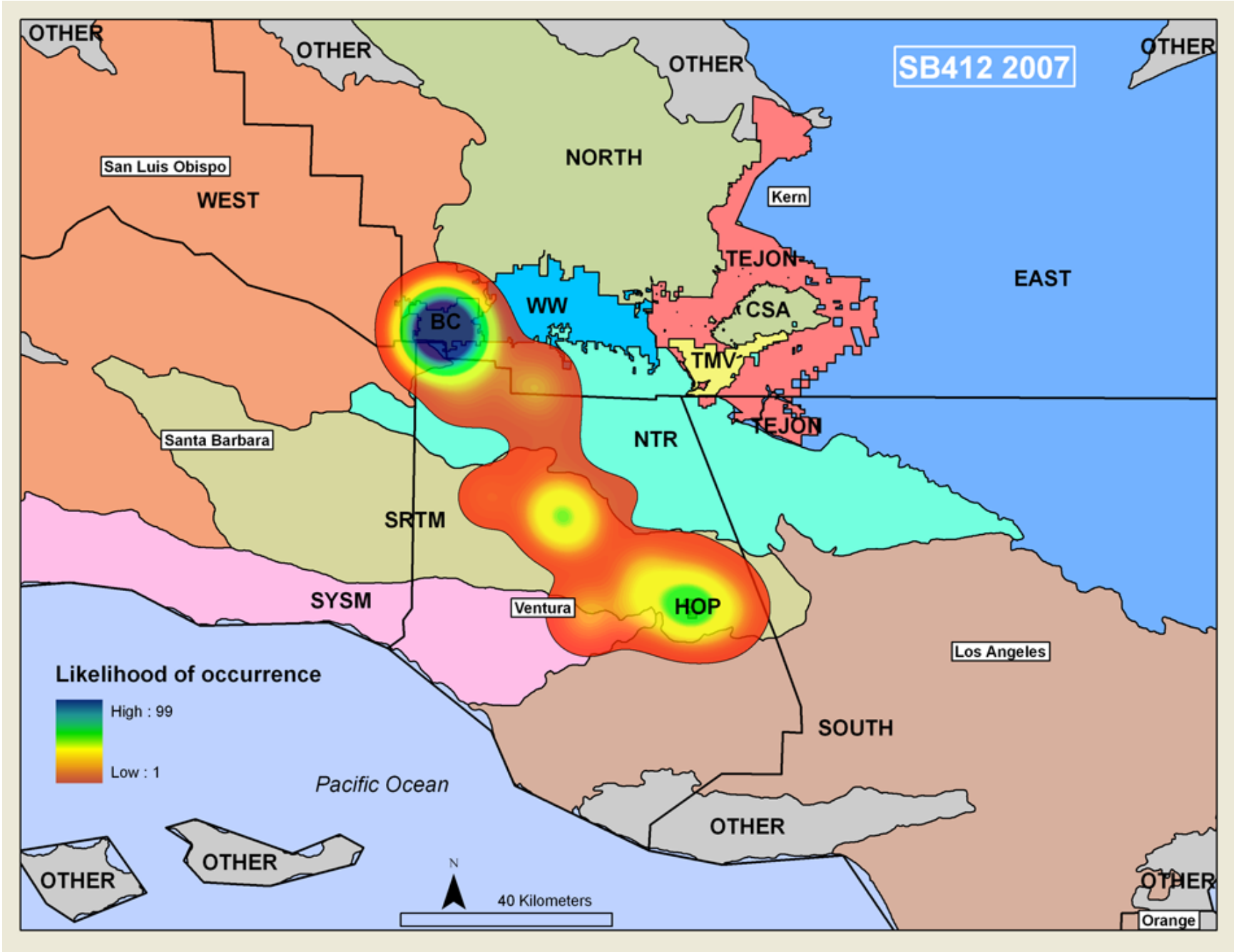
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Likelihood of occurrence
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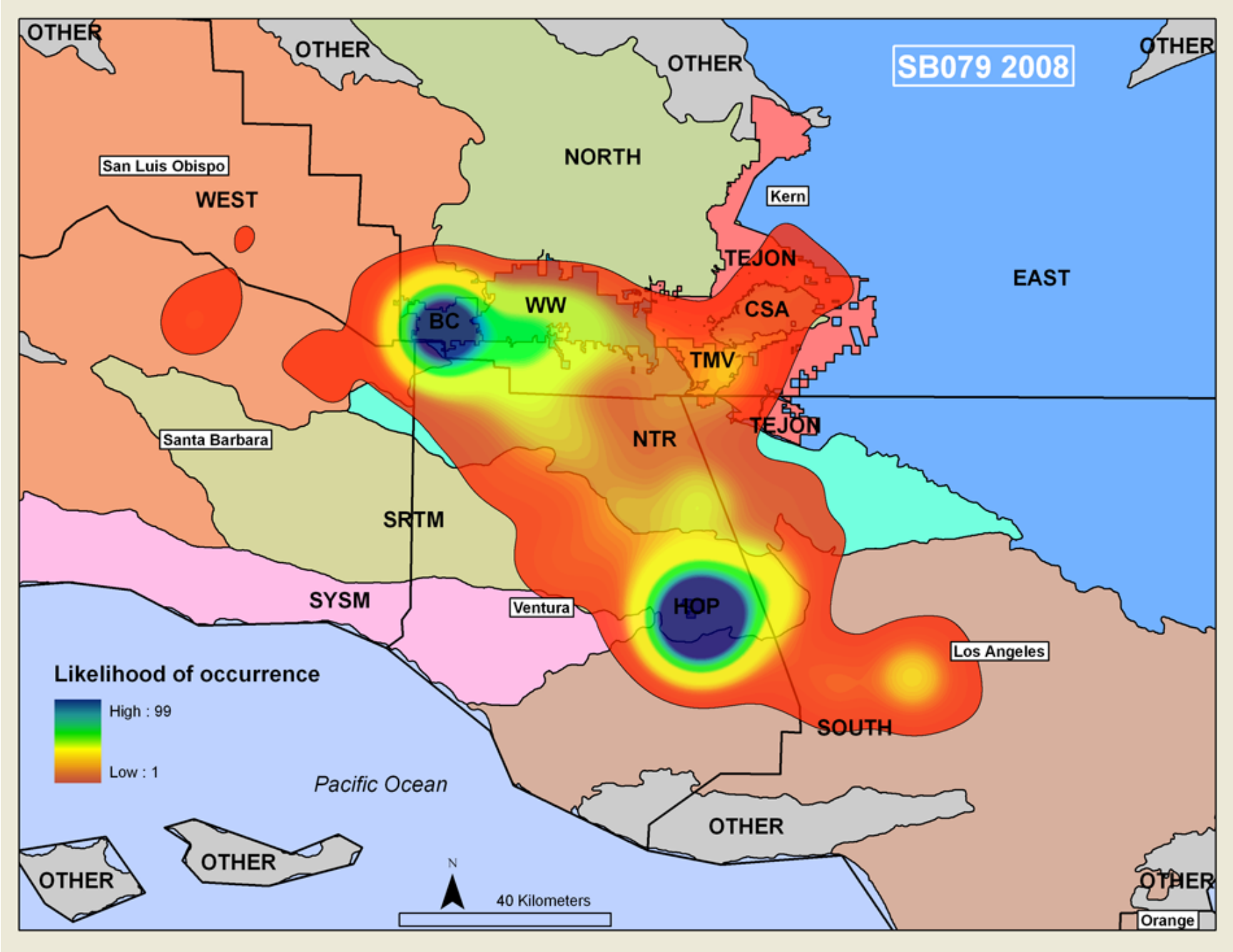
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Likelihood of occurrence
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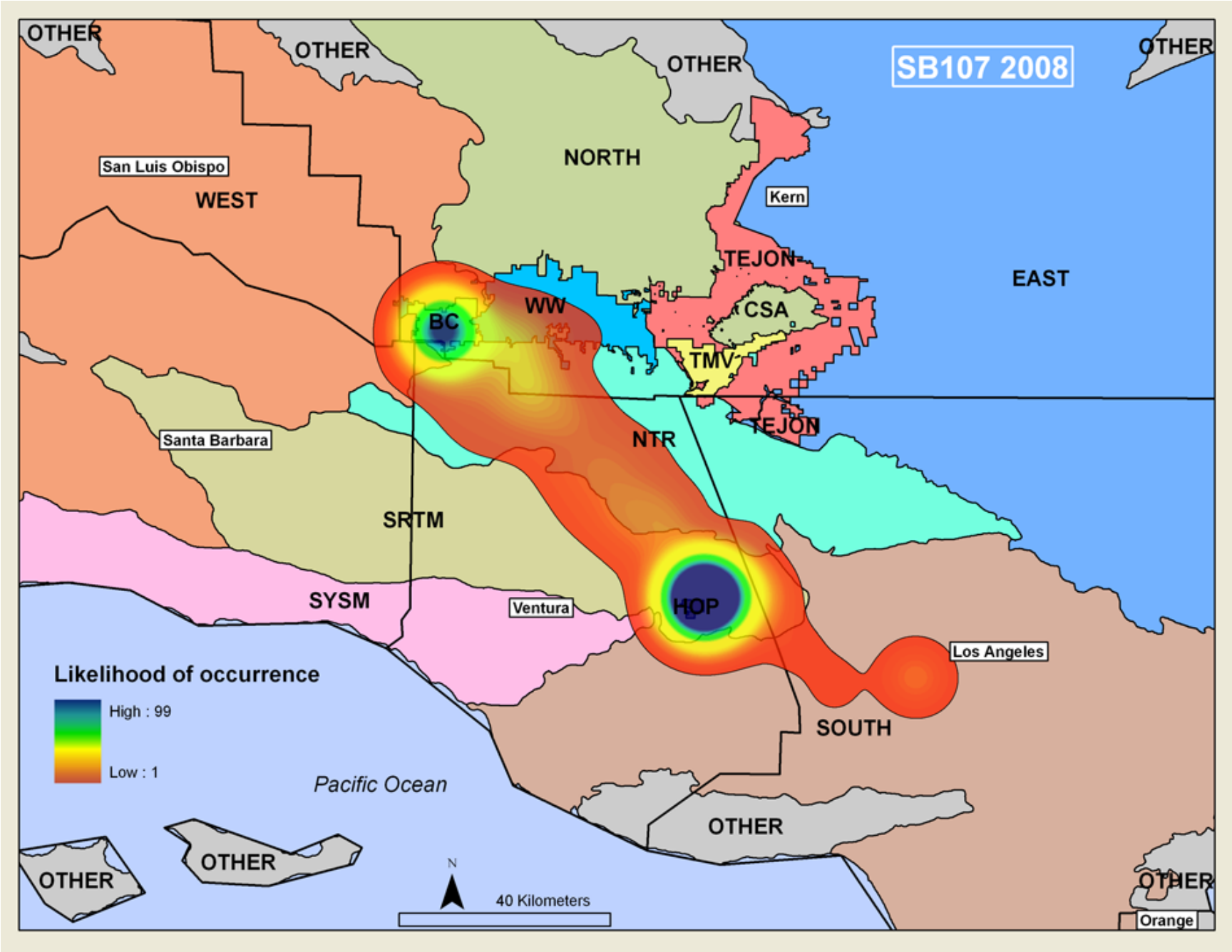
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SYSM
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SOUTH
Likelihood of occurrence
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Low : 1
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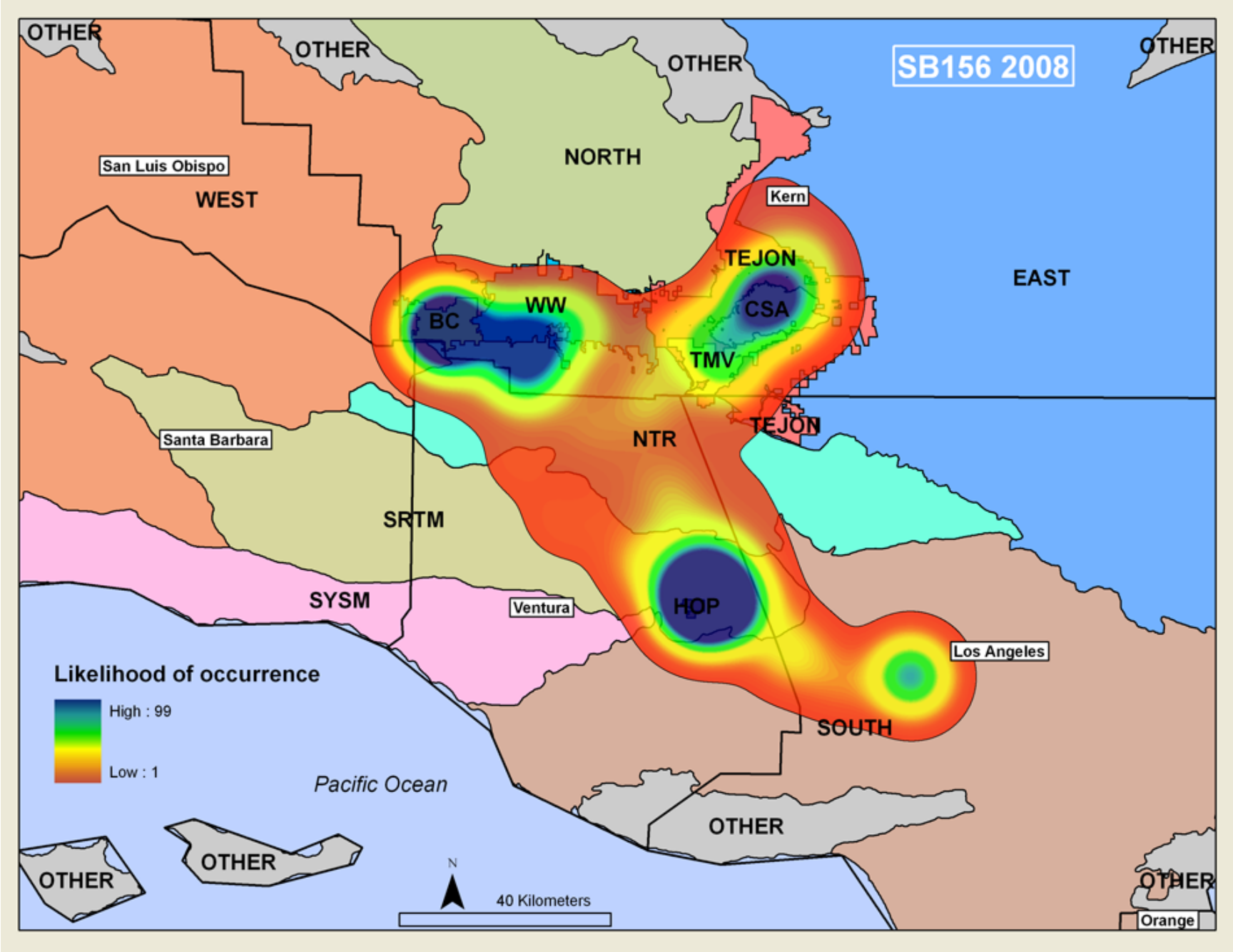
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SYSM
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Los Angeles
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Likelihood of occurrence
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Low : 1
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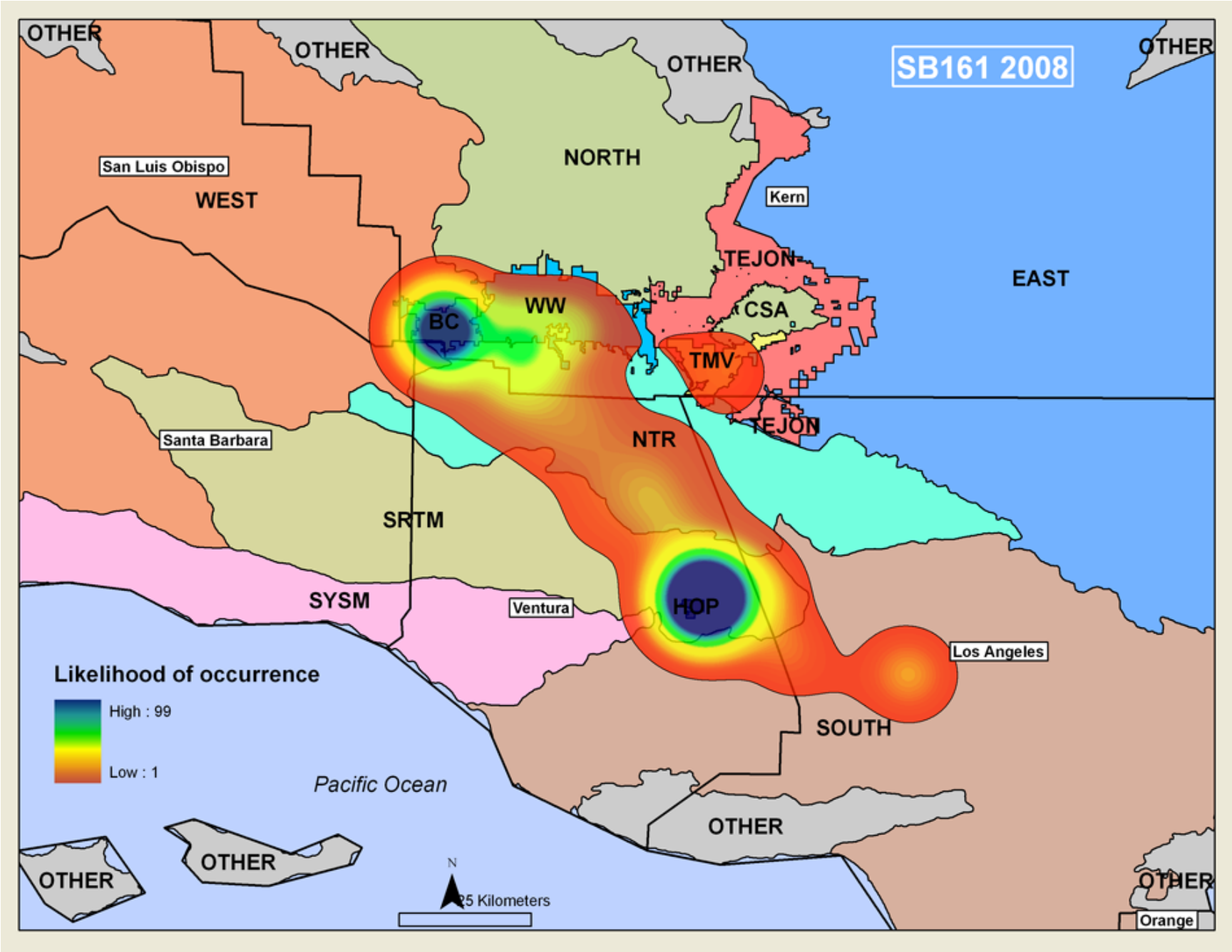
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Likelihood of occurrence
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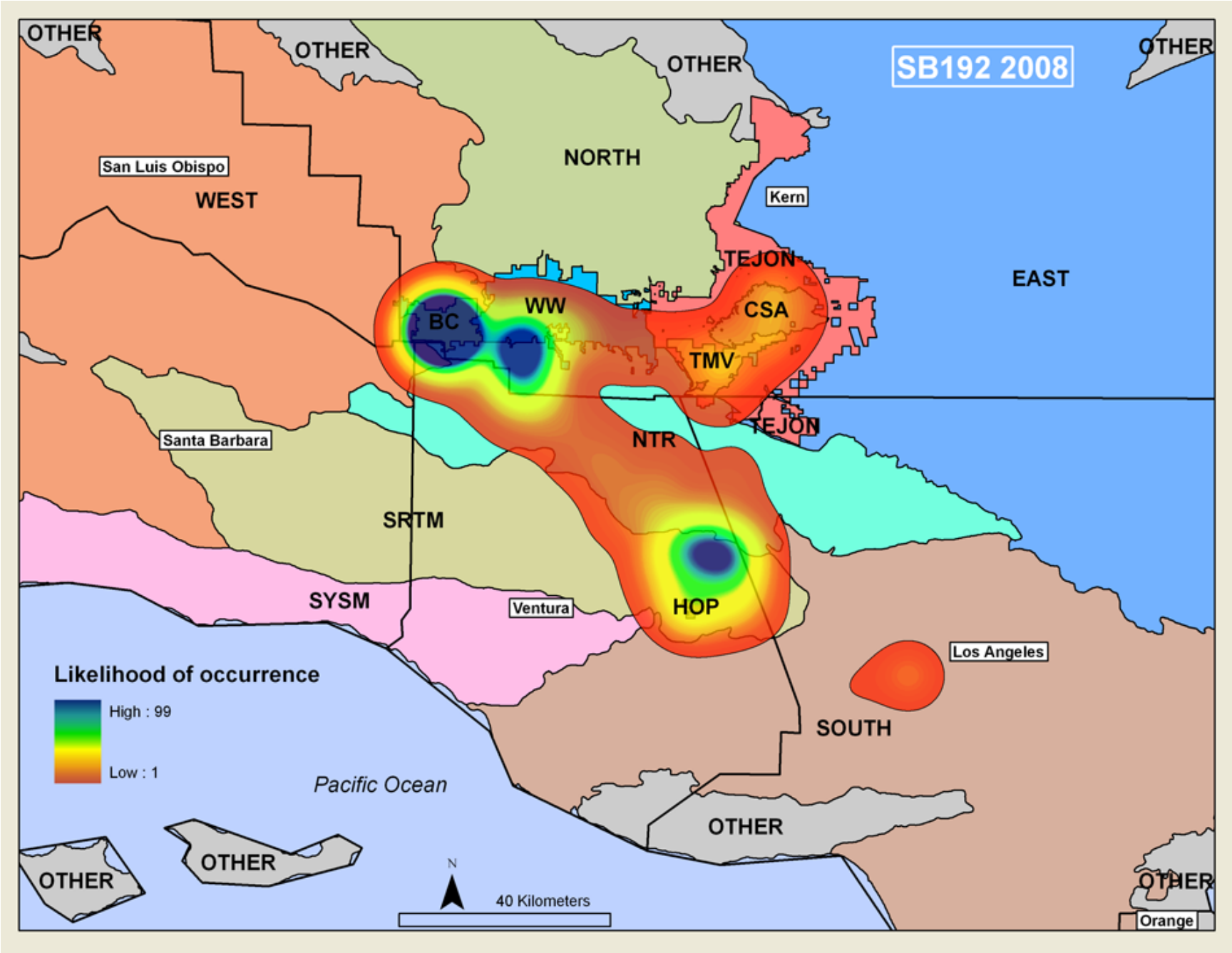
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Likelihood of occurrence
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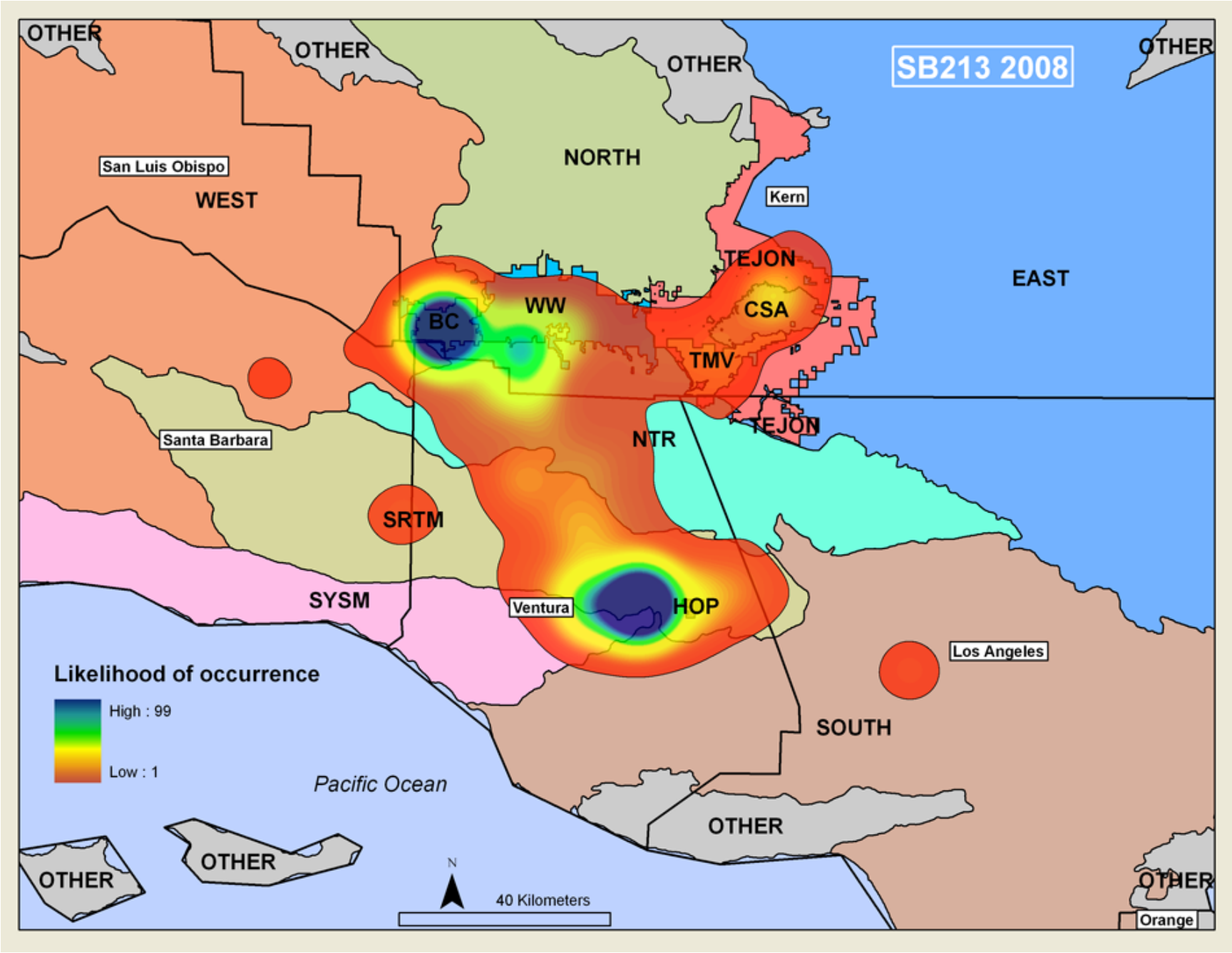
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SYSM
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Likelihood of occurrence
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Low : 1
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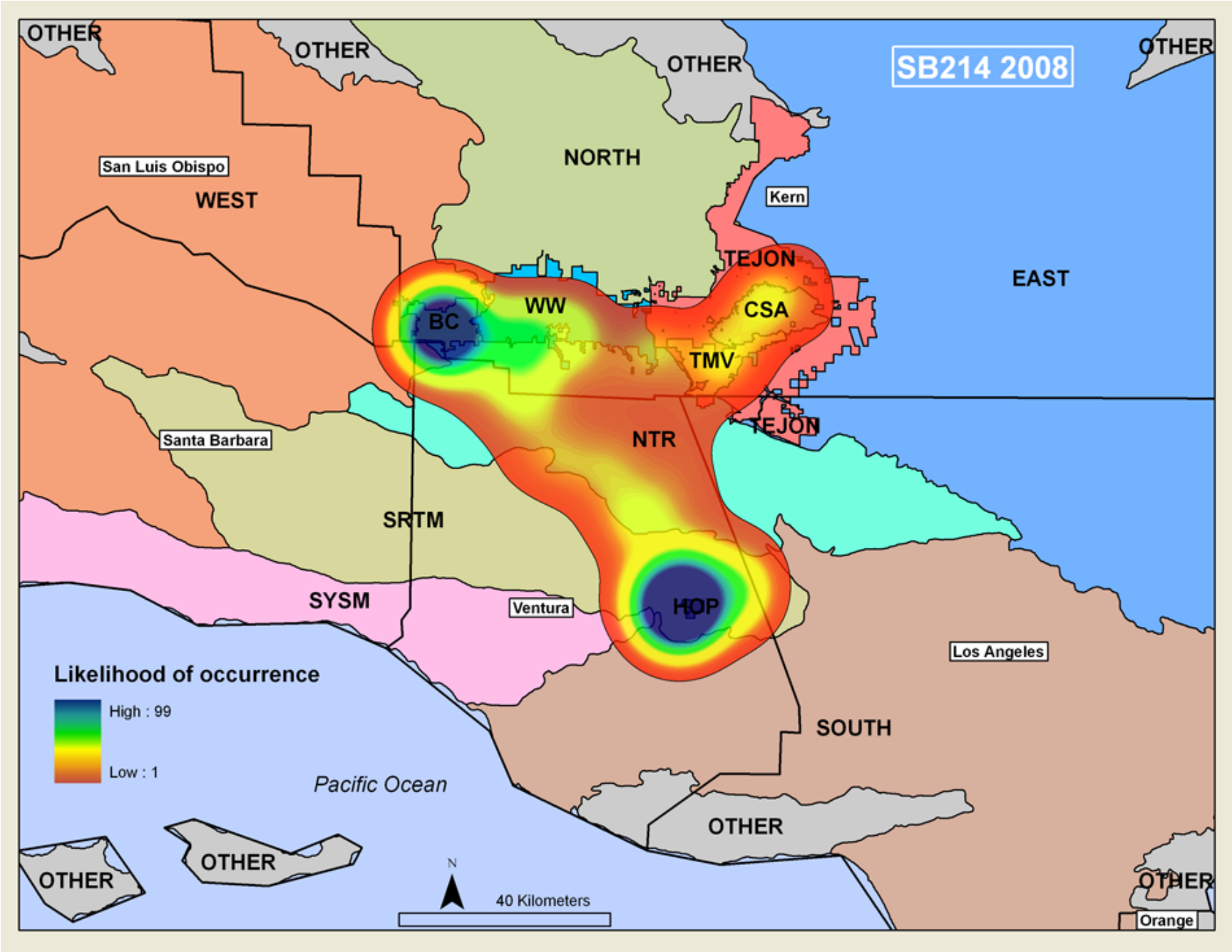
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SRTM
SYSM
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Likelihood of occurrence
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Low : 1
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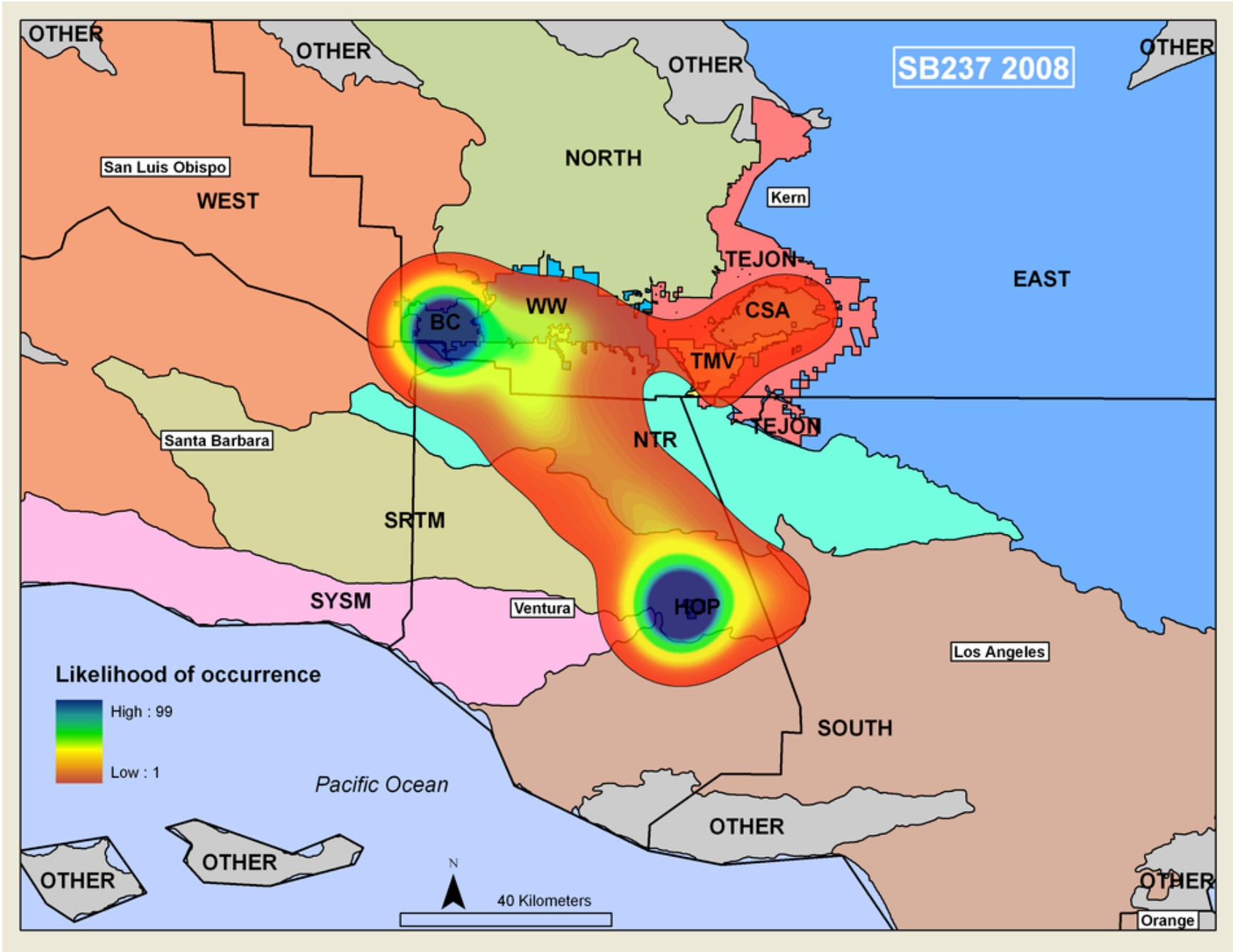
40 Kilometers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SYSM
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Likelihood of occurrence
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Low : 1
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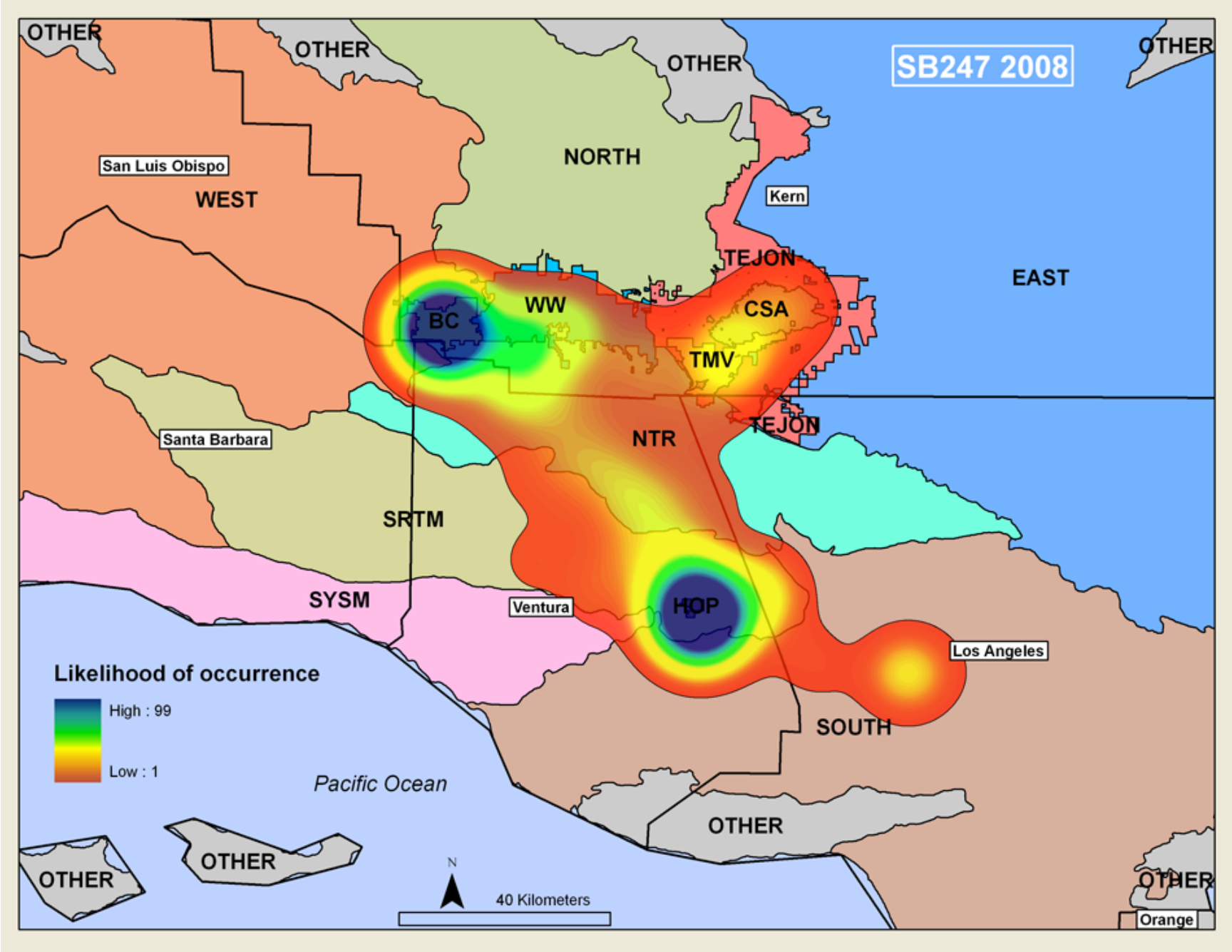
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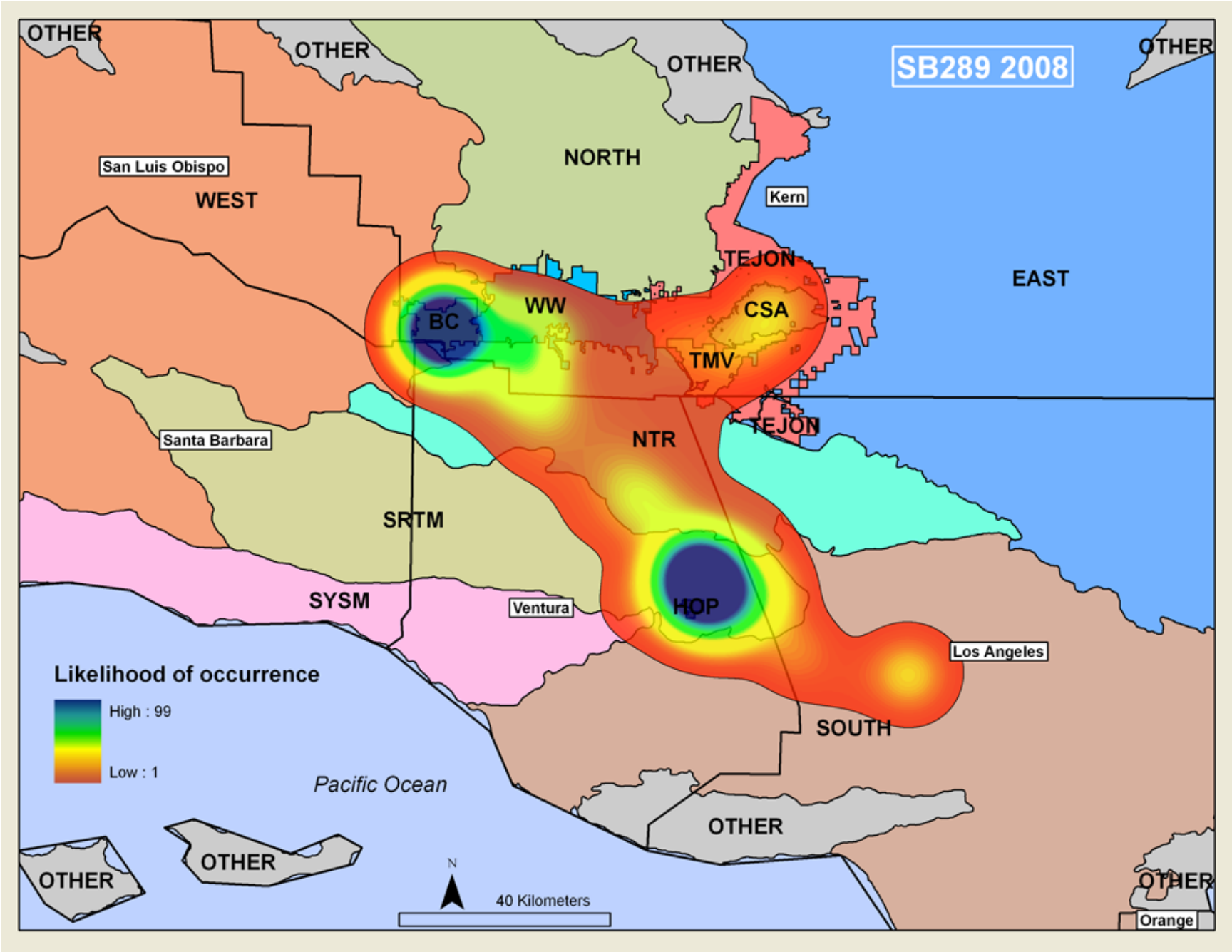
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Likelihood of occurrence
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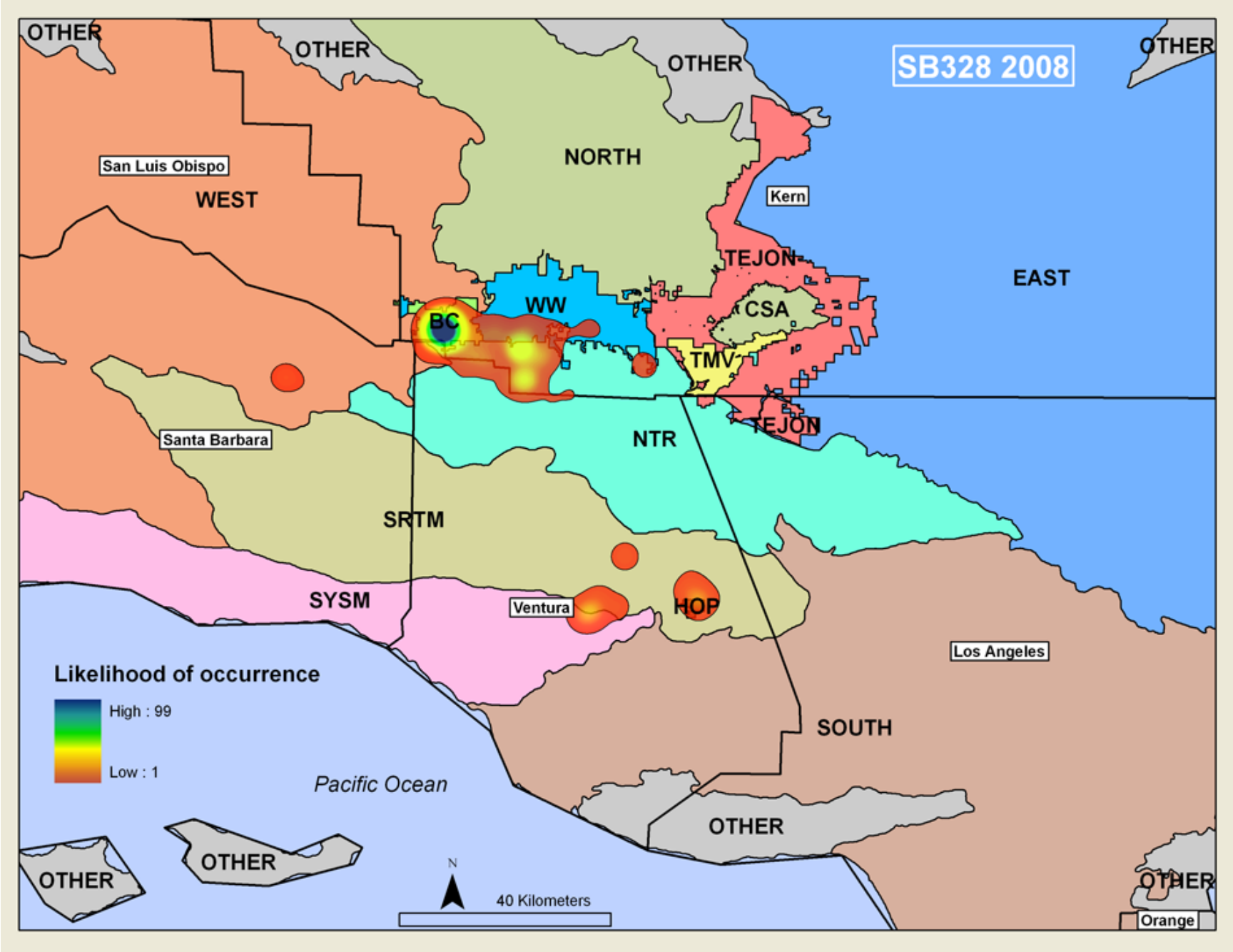
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SYSM
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Likelihood of occurrence
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Low : 1
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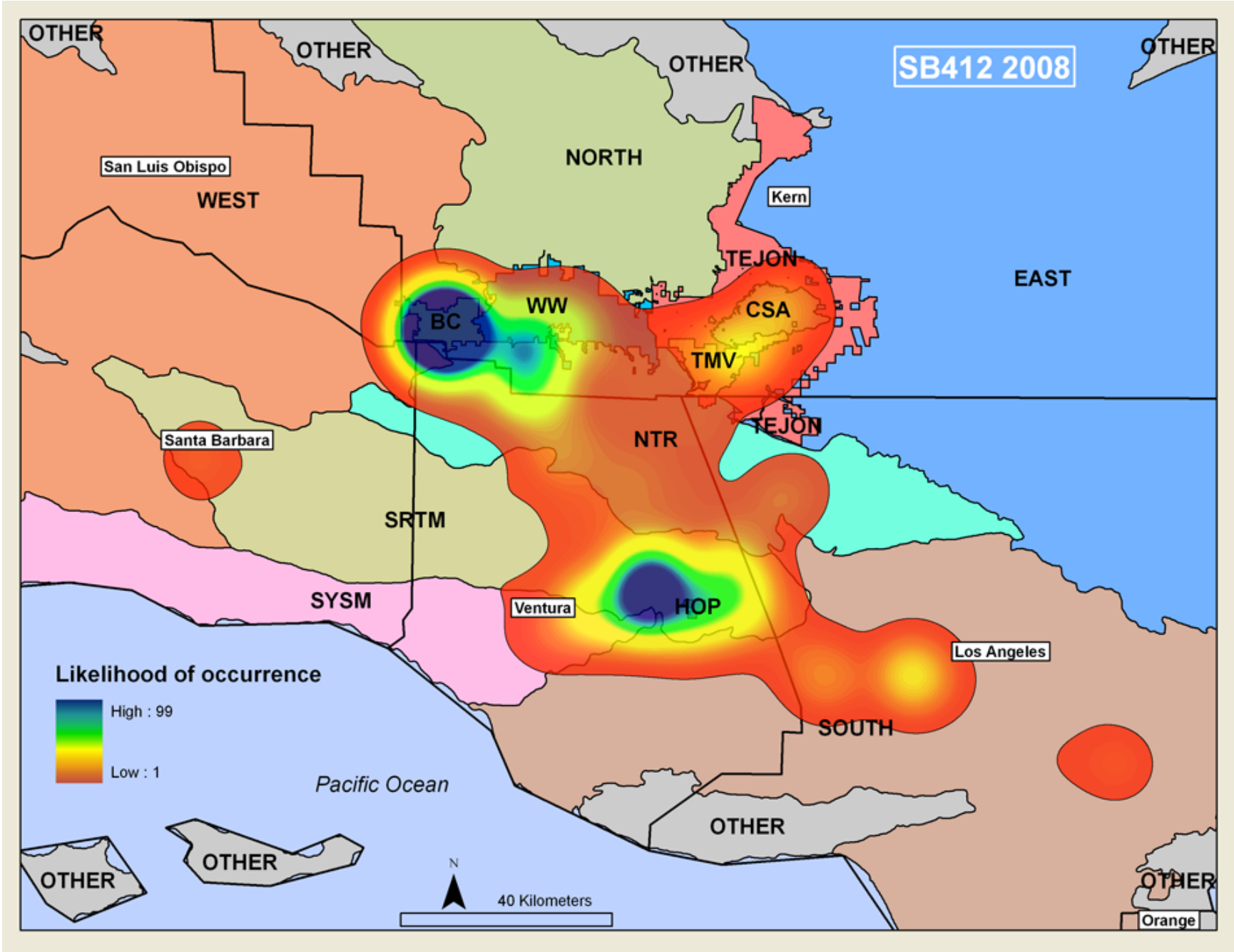
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Likelihood of occurrence
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Low : 1
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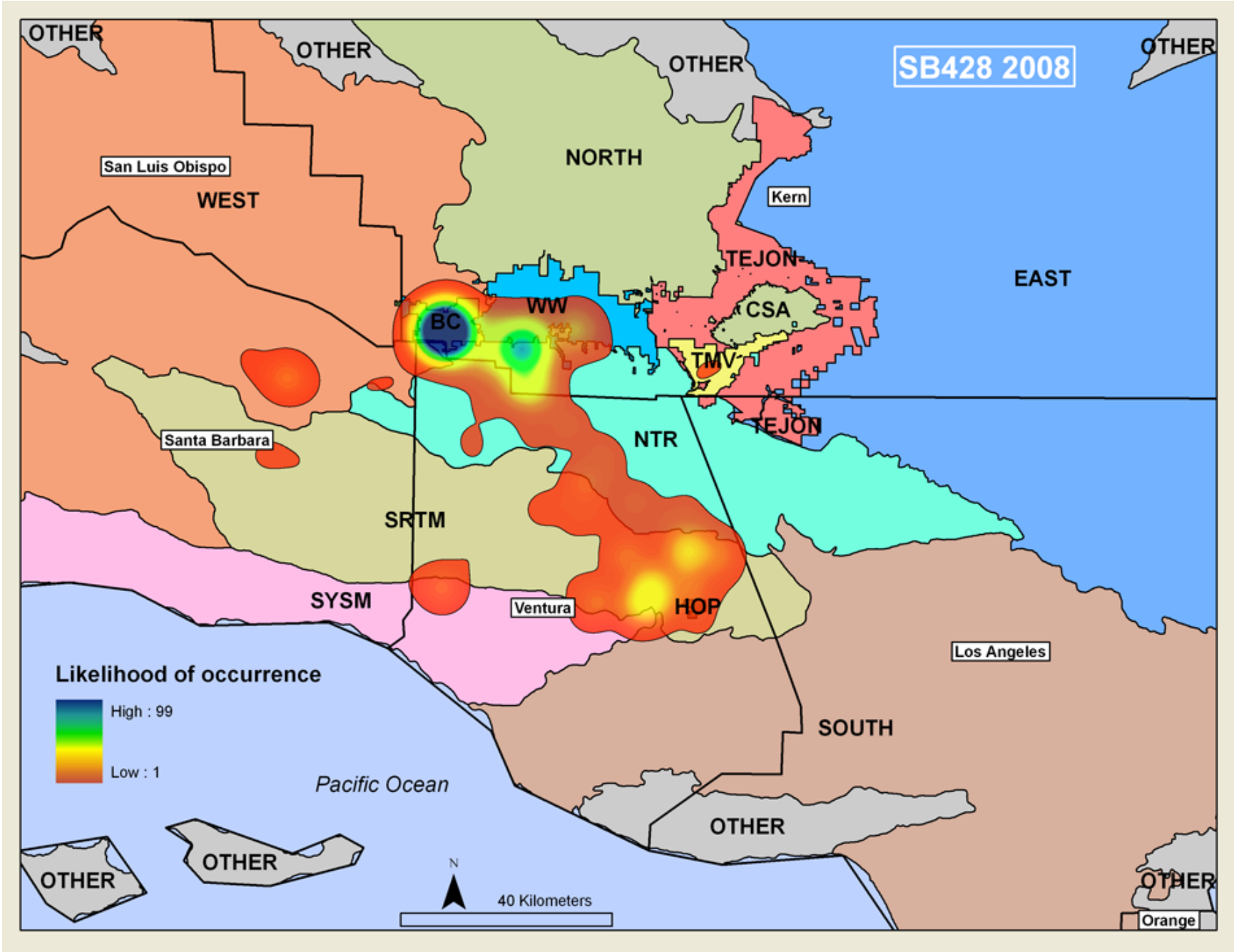
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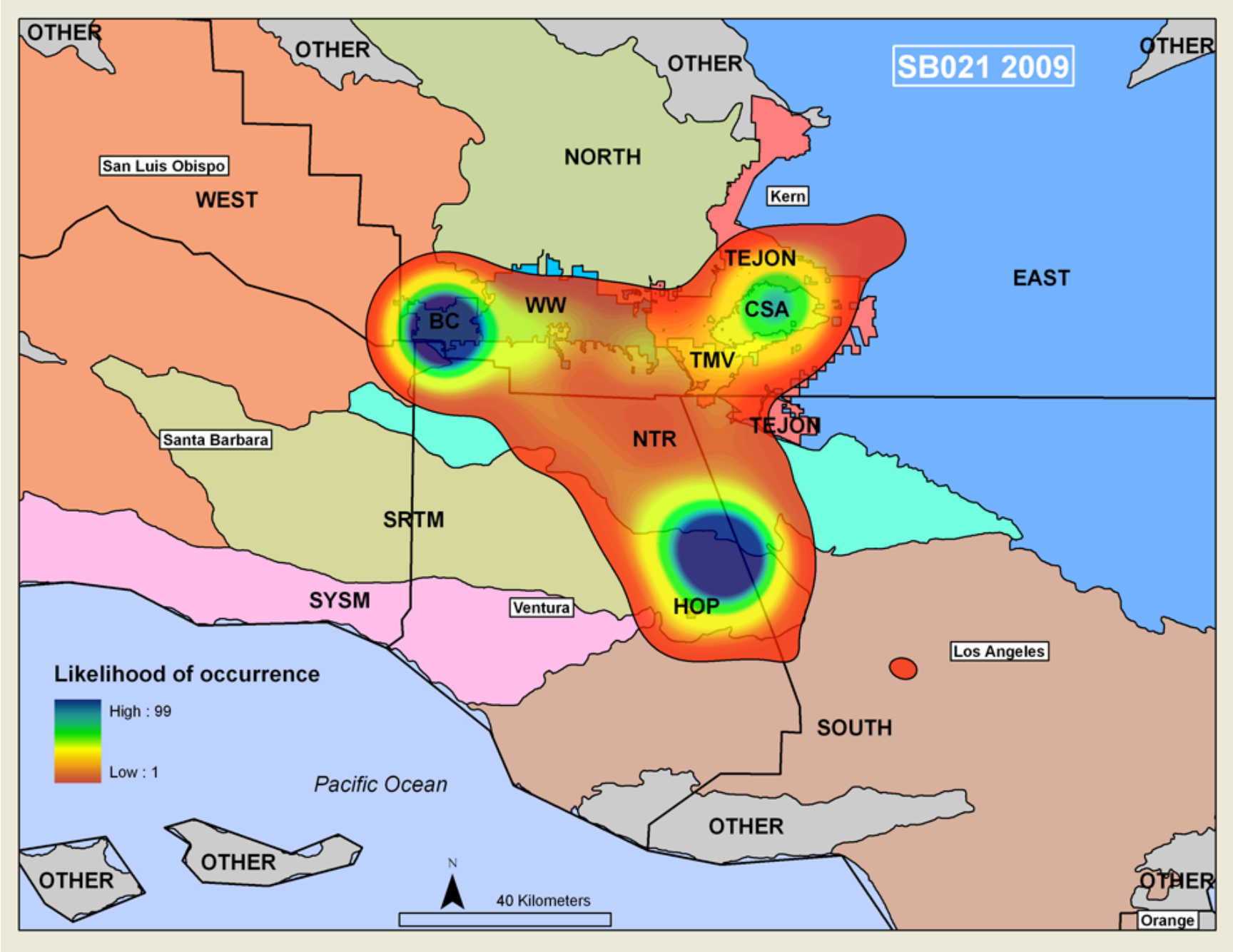
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Likelihood of occurrence
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Low : 1
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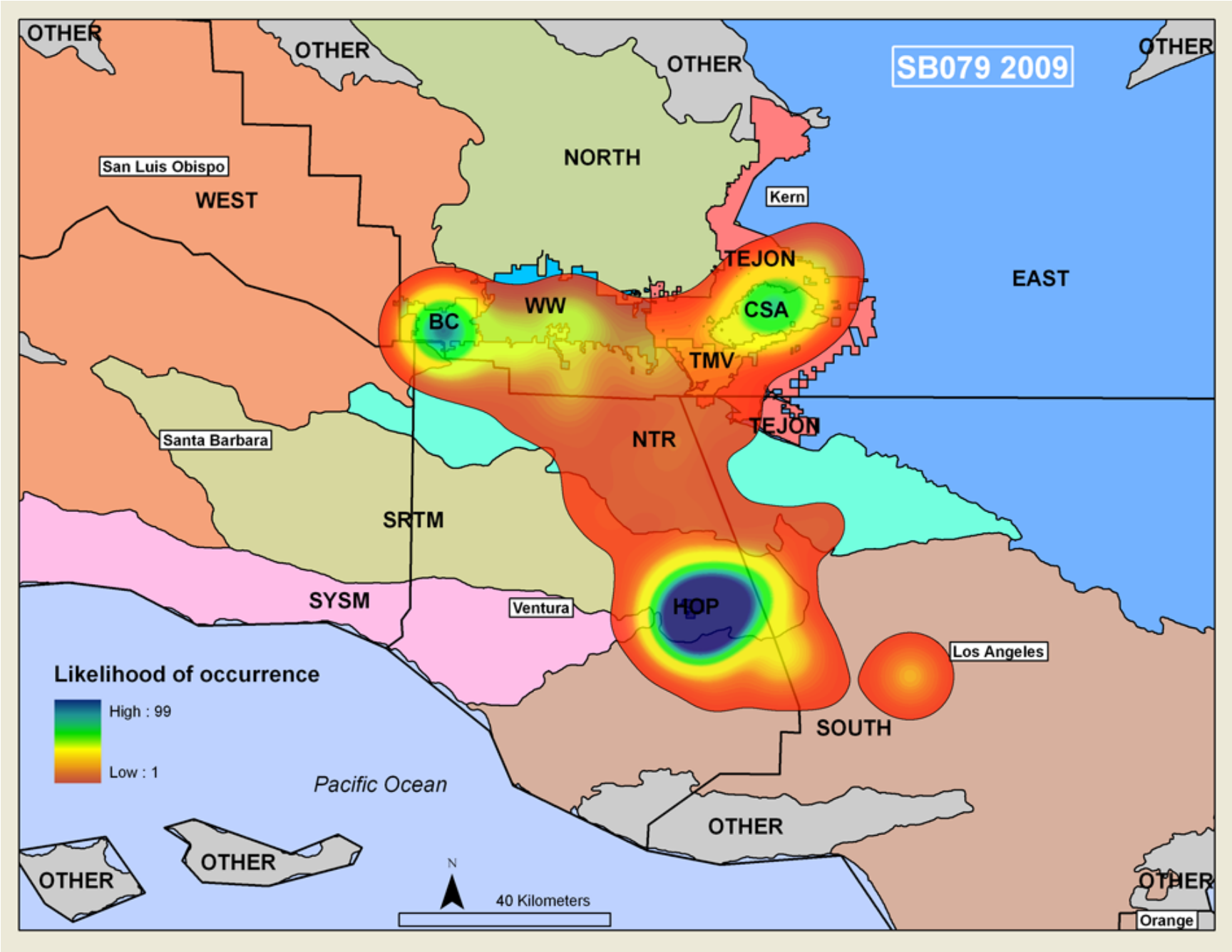
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Likelihood of occurrence
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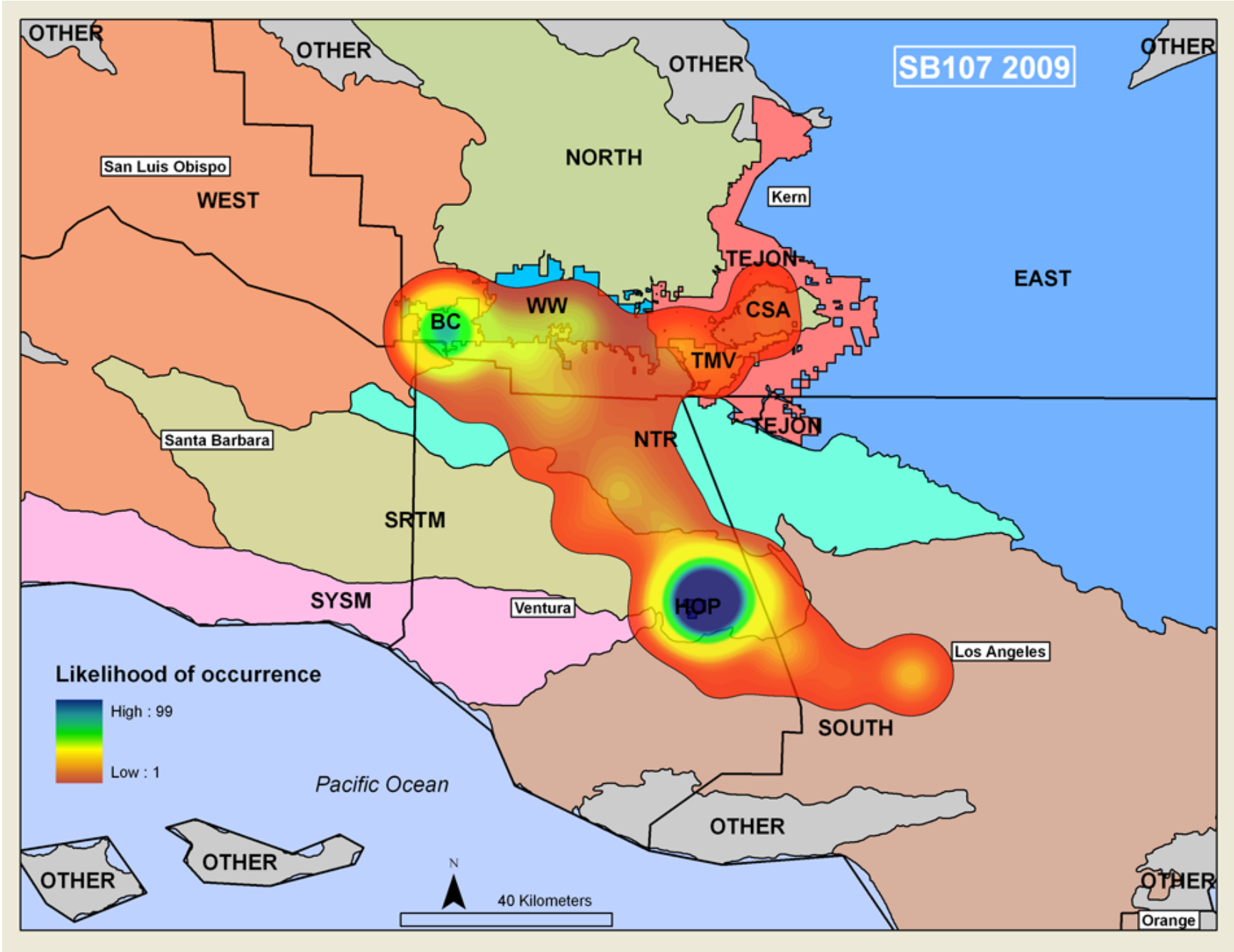
Orange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Likelihood of occurrence
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Low : 1
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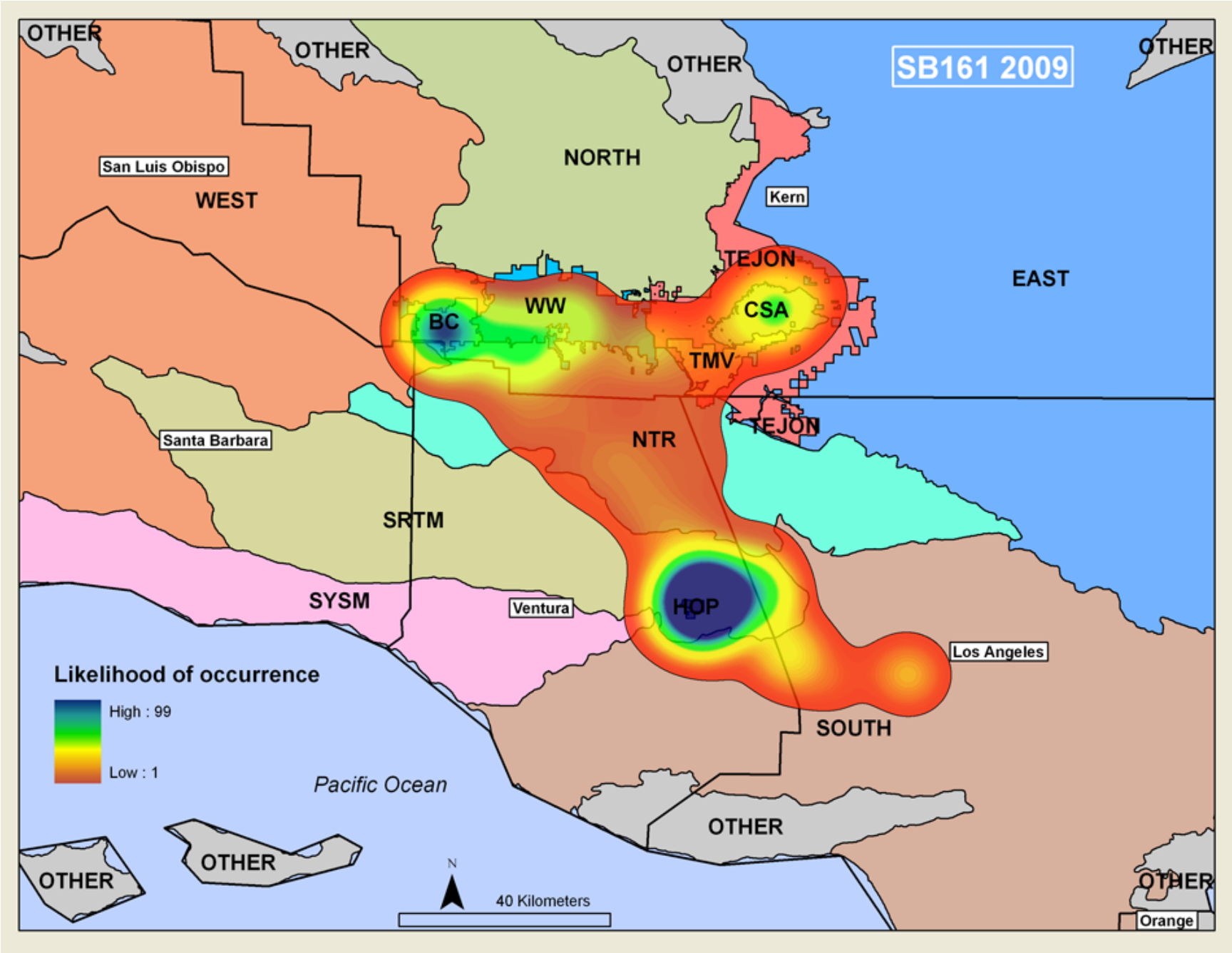
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Likelihood of occurrence
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Low : 1
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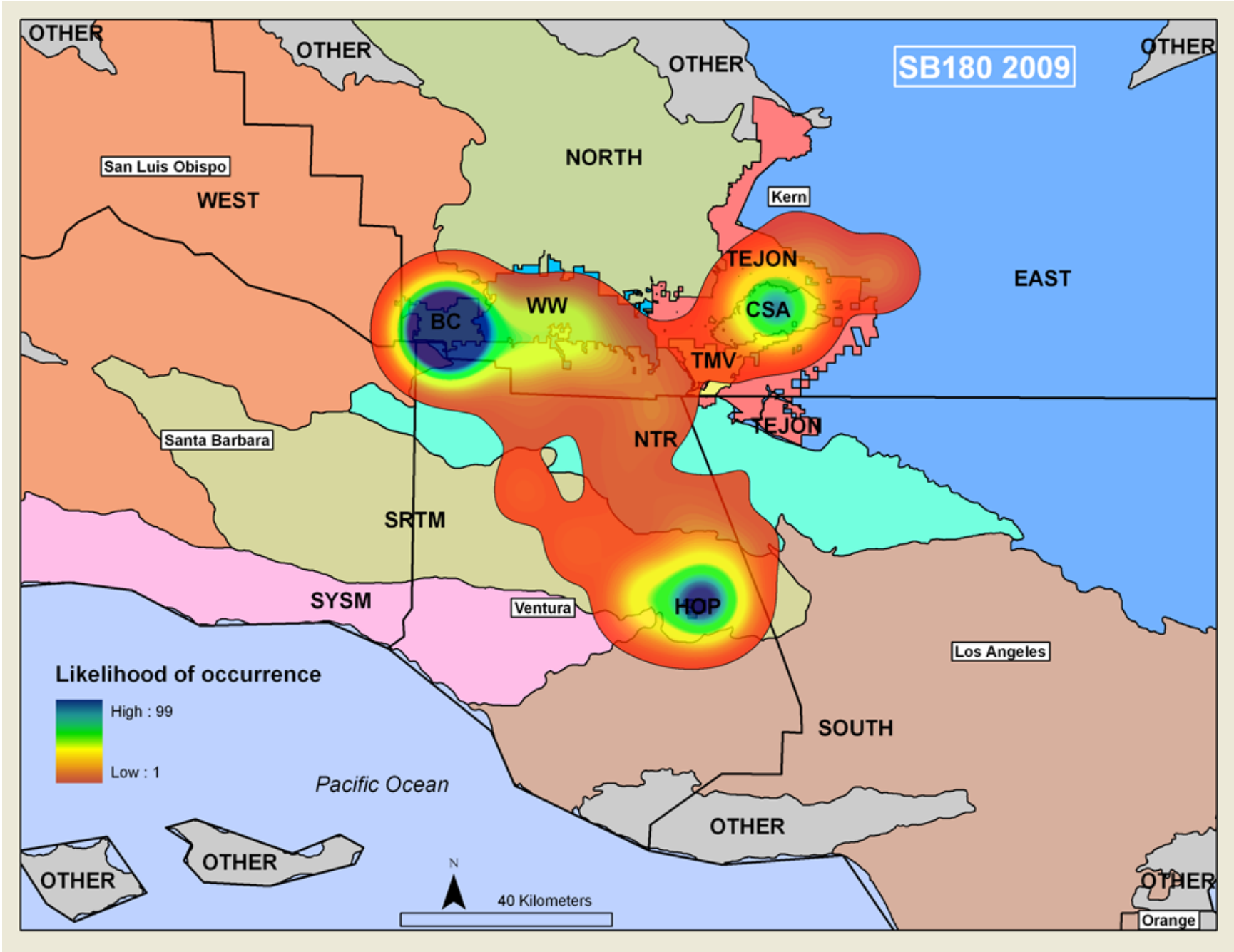
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Likelihood of occurrence
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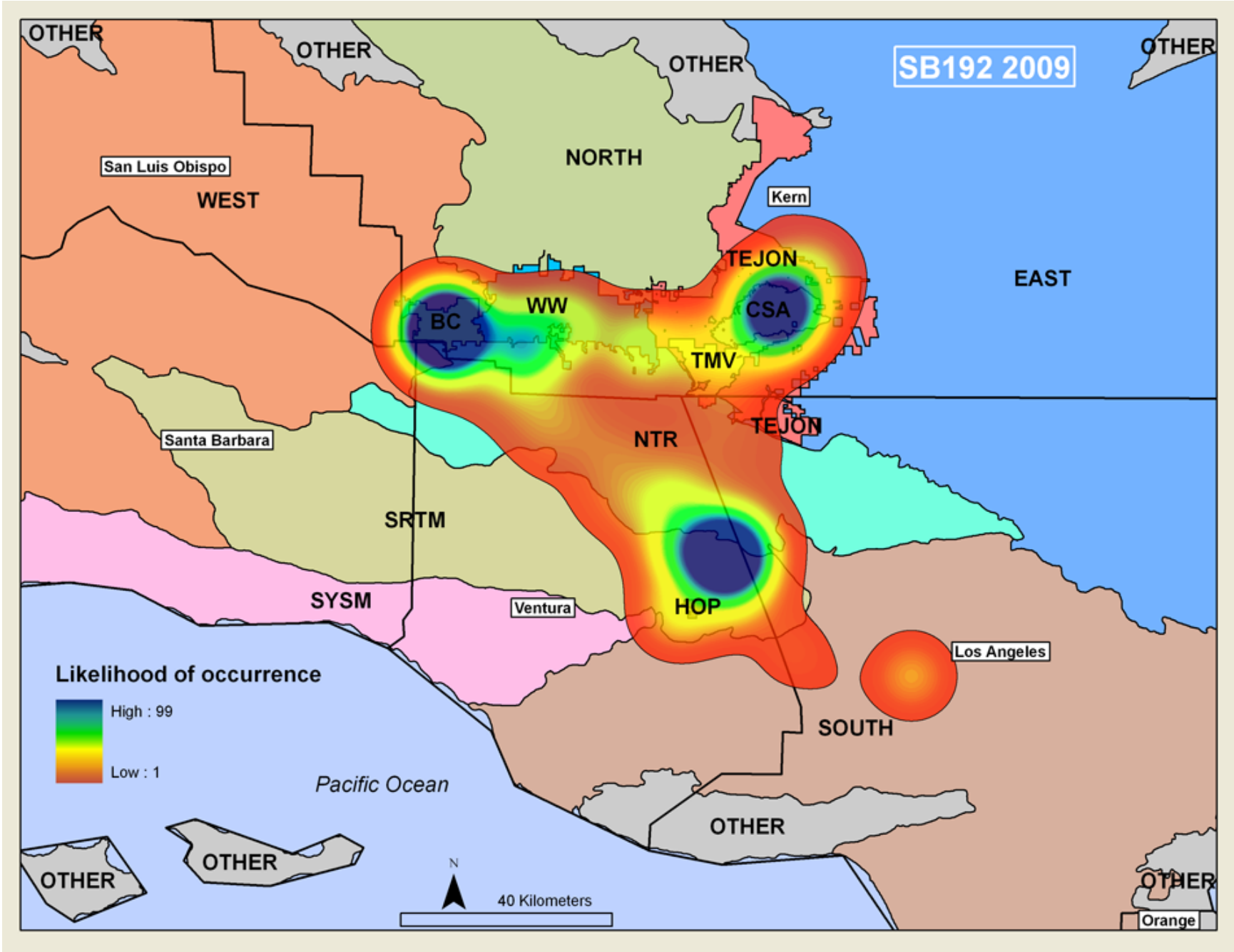
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Likelihood of occurrence
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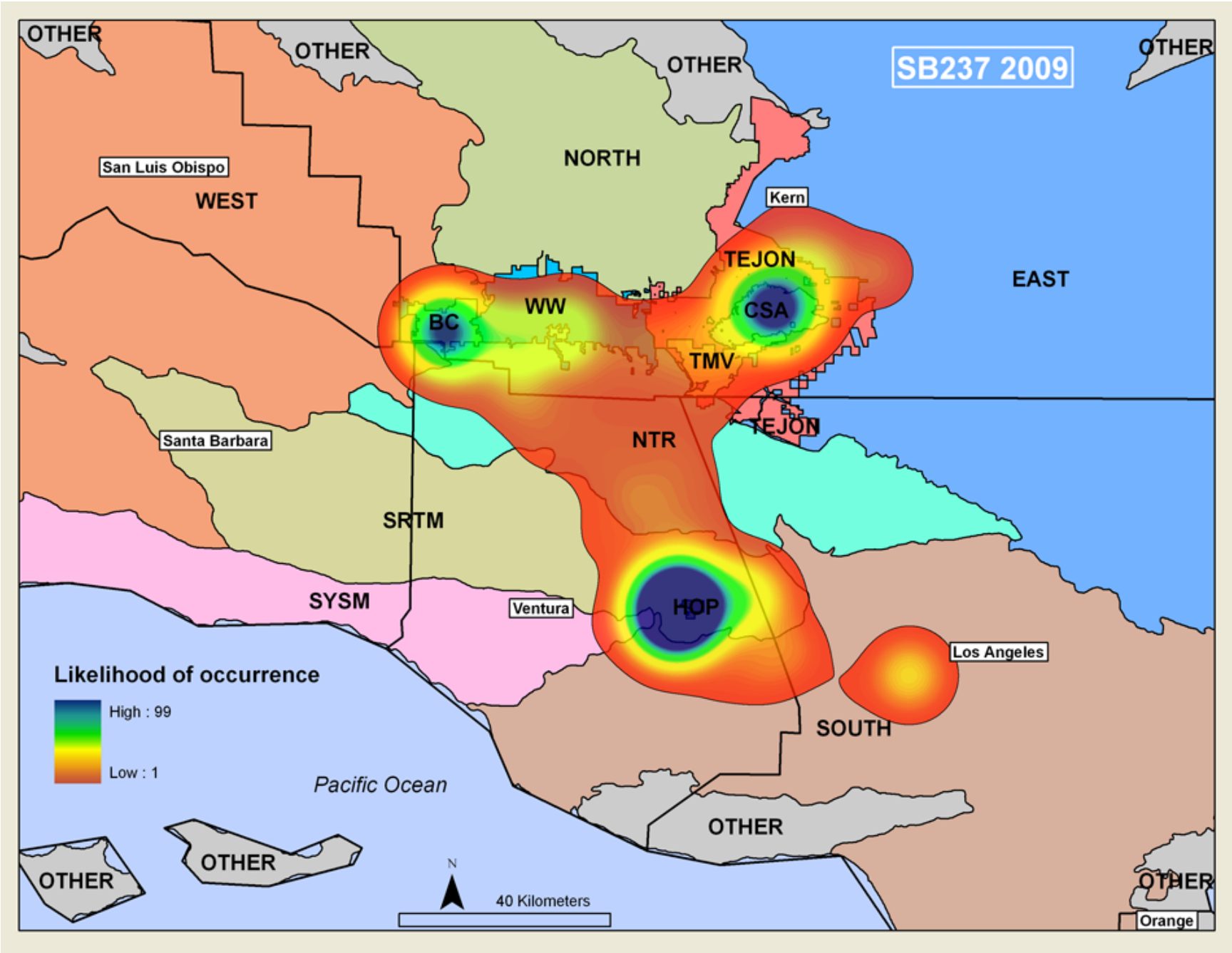
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Likelihood of occurrence
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Low : 1
Pacific Ocean
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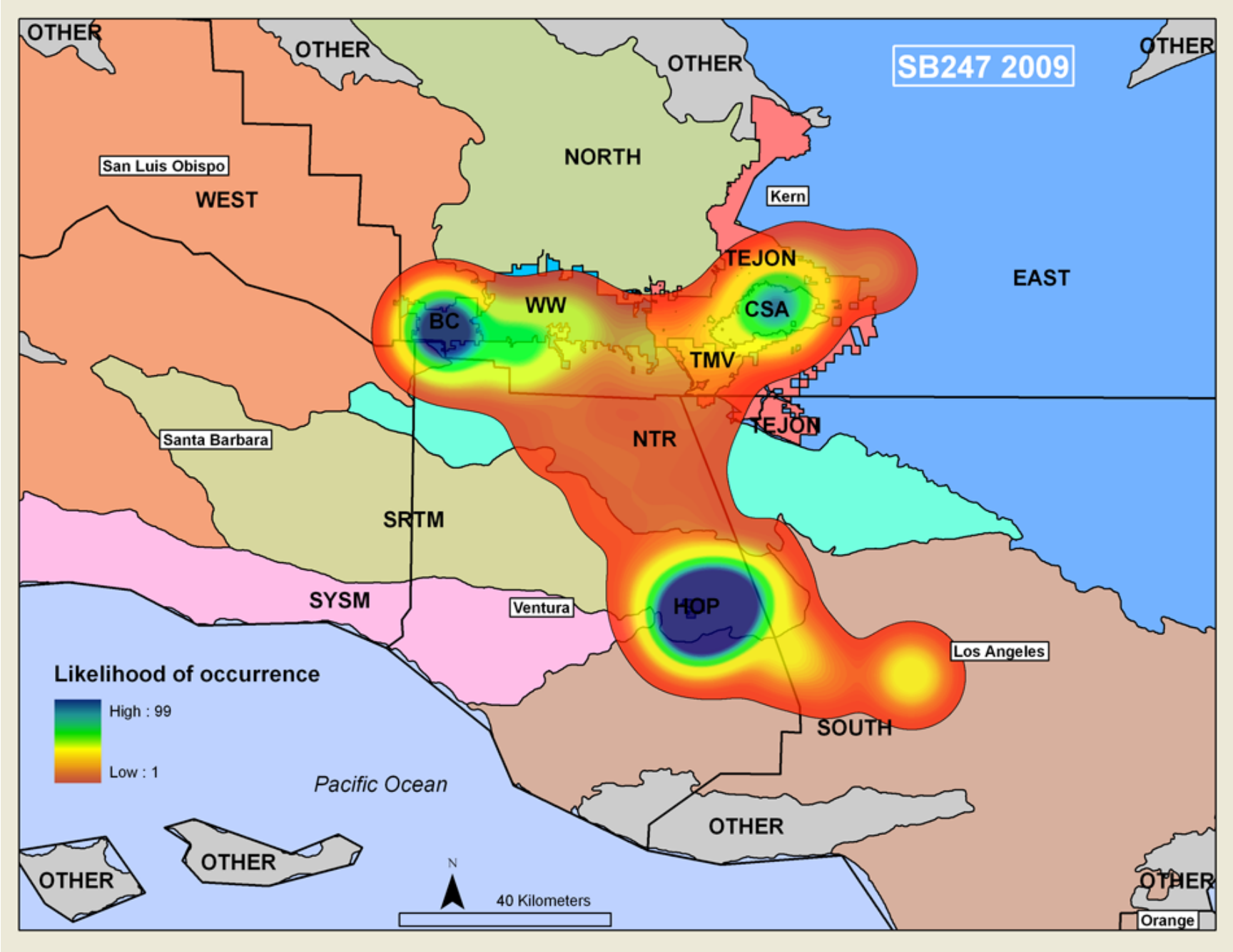
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Likelihood of occurrence
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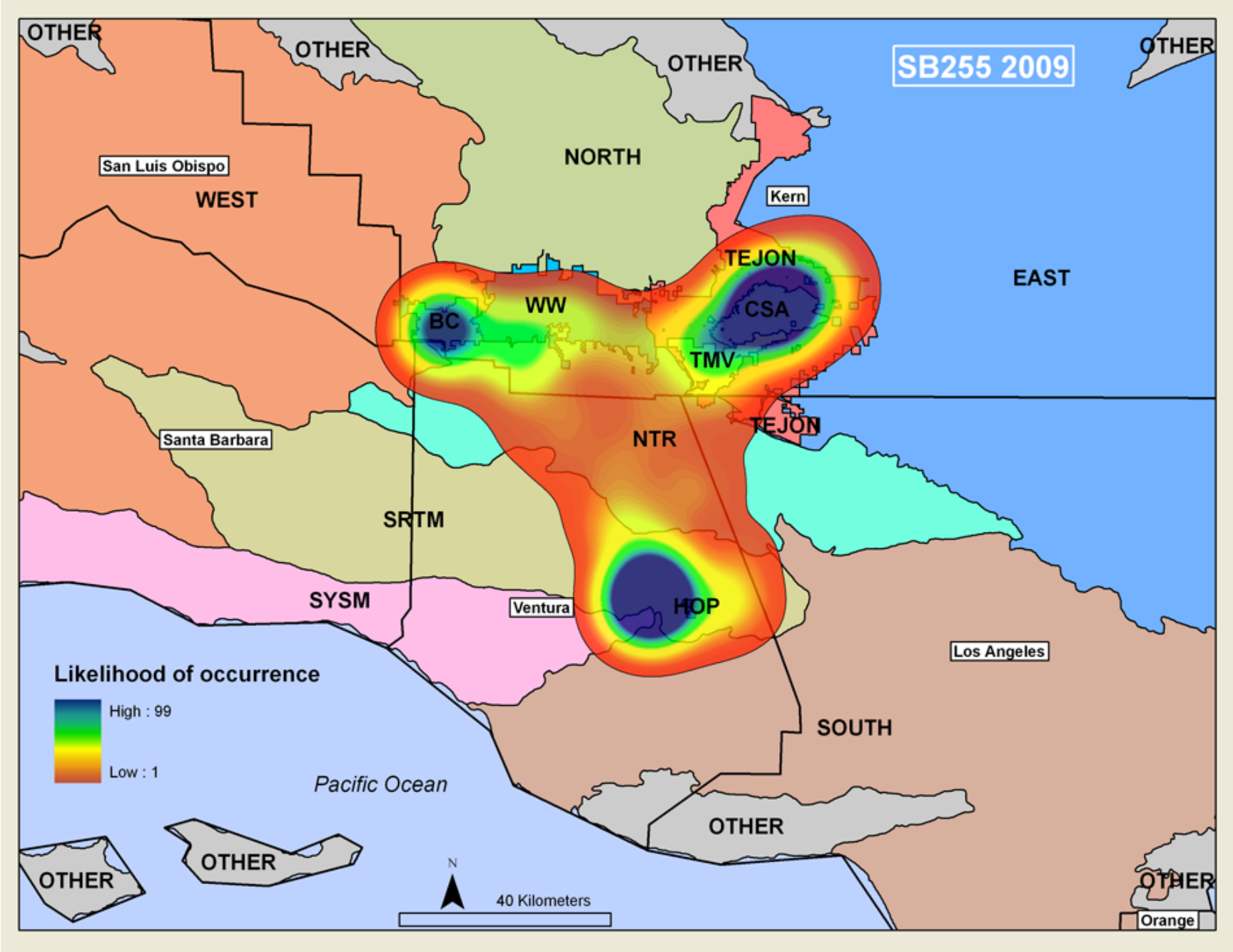
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Likelihood of occurrence
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Low : 1
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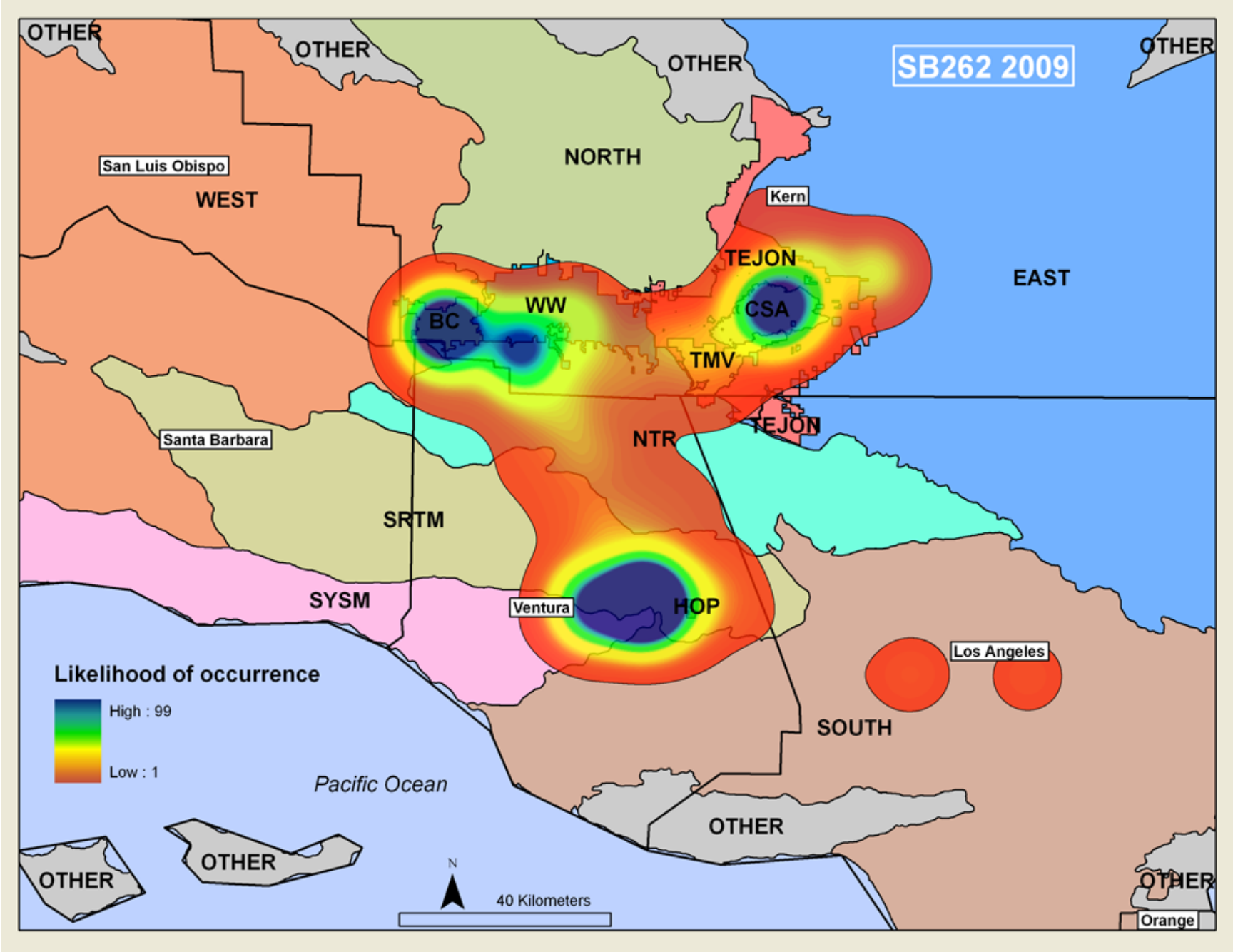
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Likelihood of occurrence
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Low : 1
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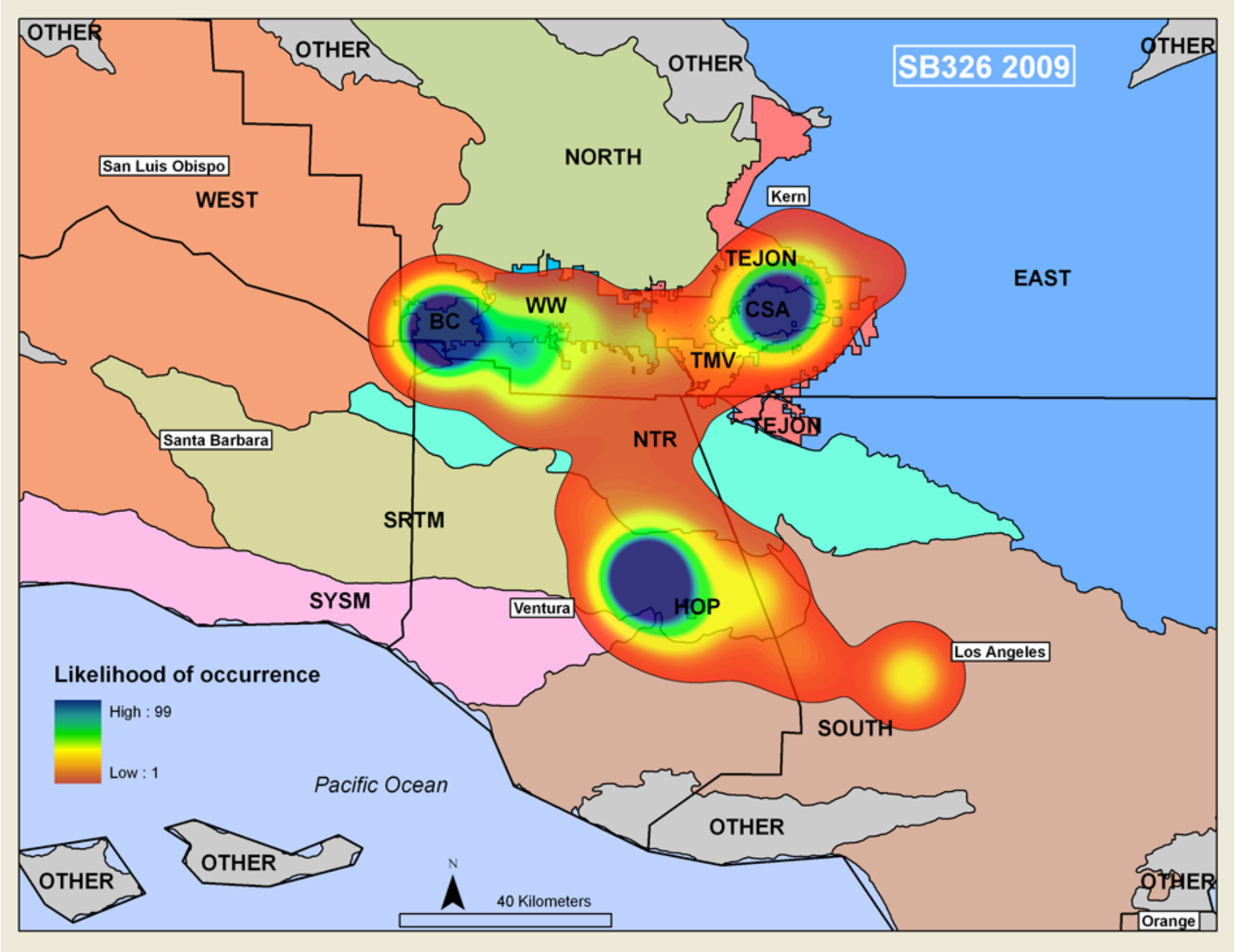
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Likelihood of occurrence
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Low : 1
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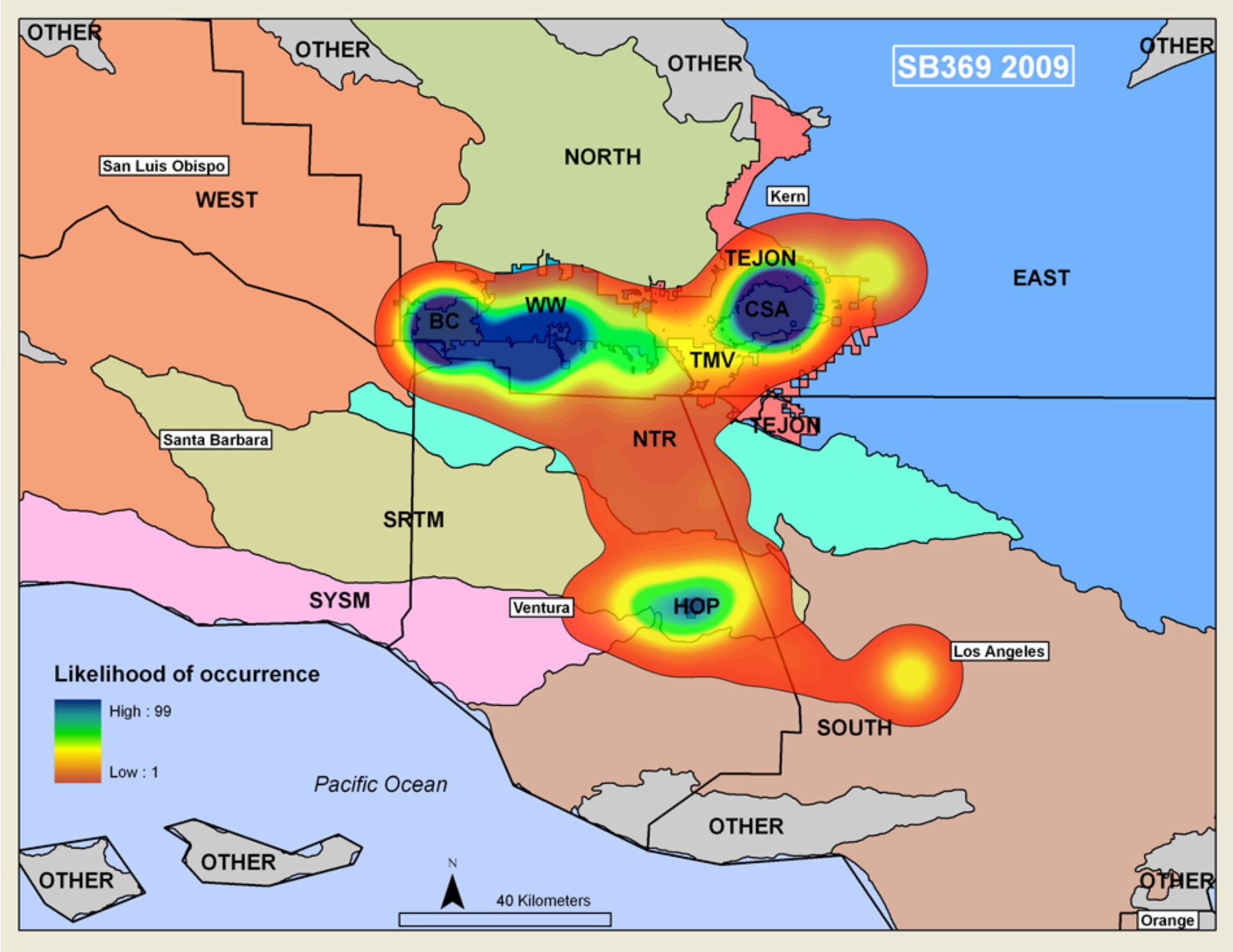
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Likelihood of occurrence
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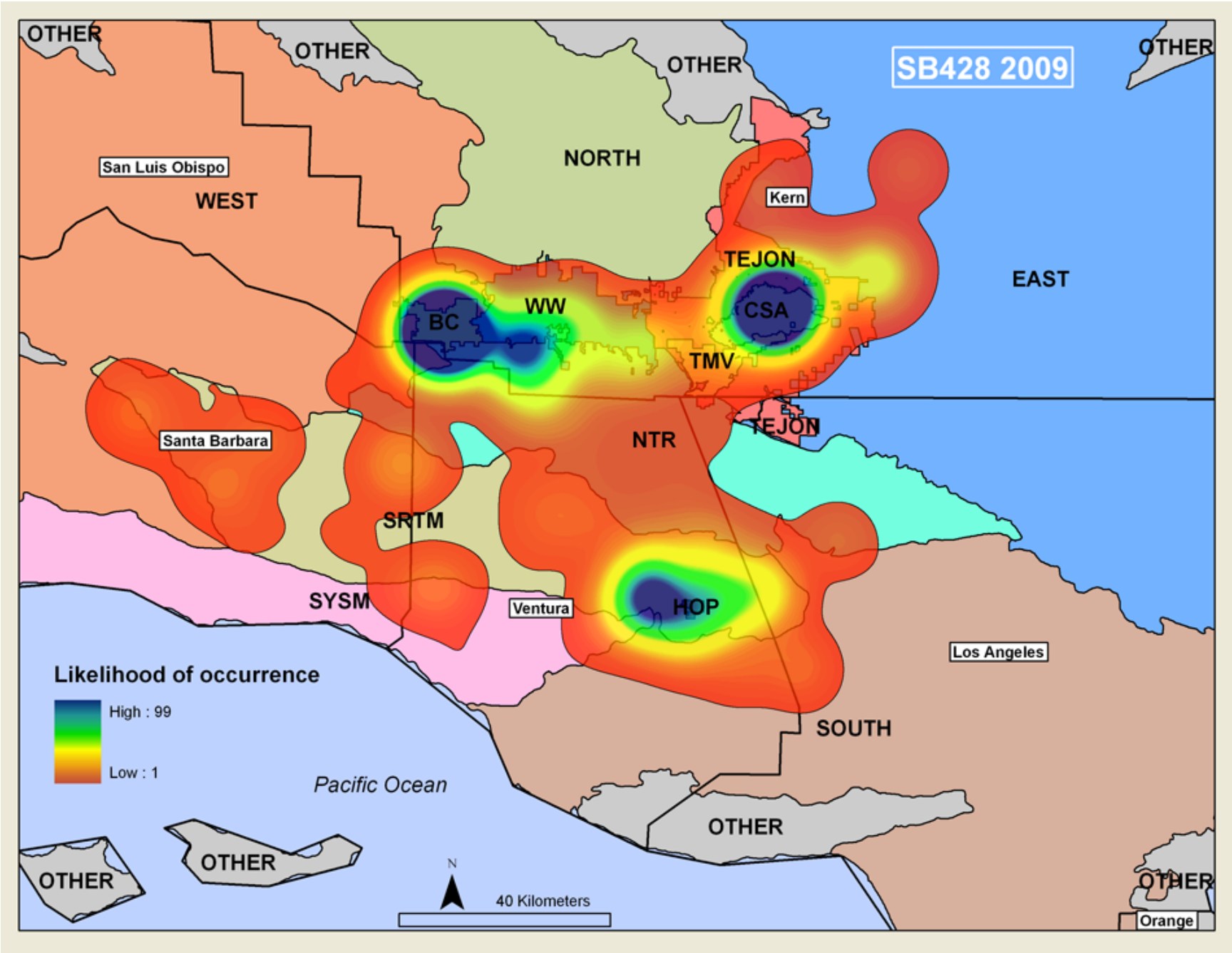
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SYSM
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Likelihood of occurrence
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Low : 1
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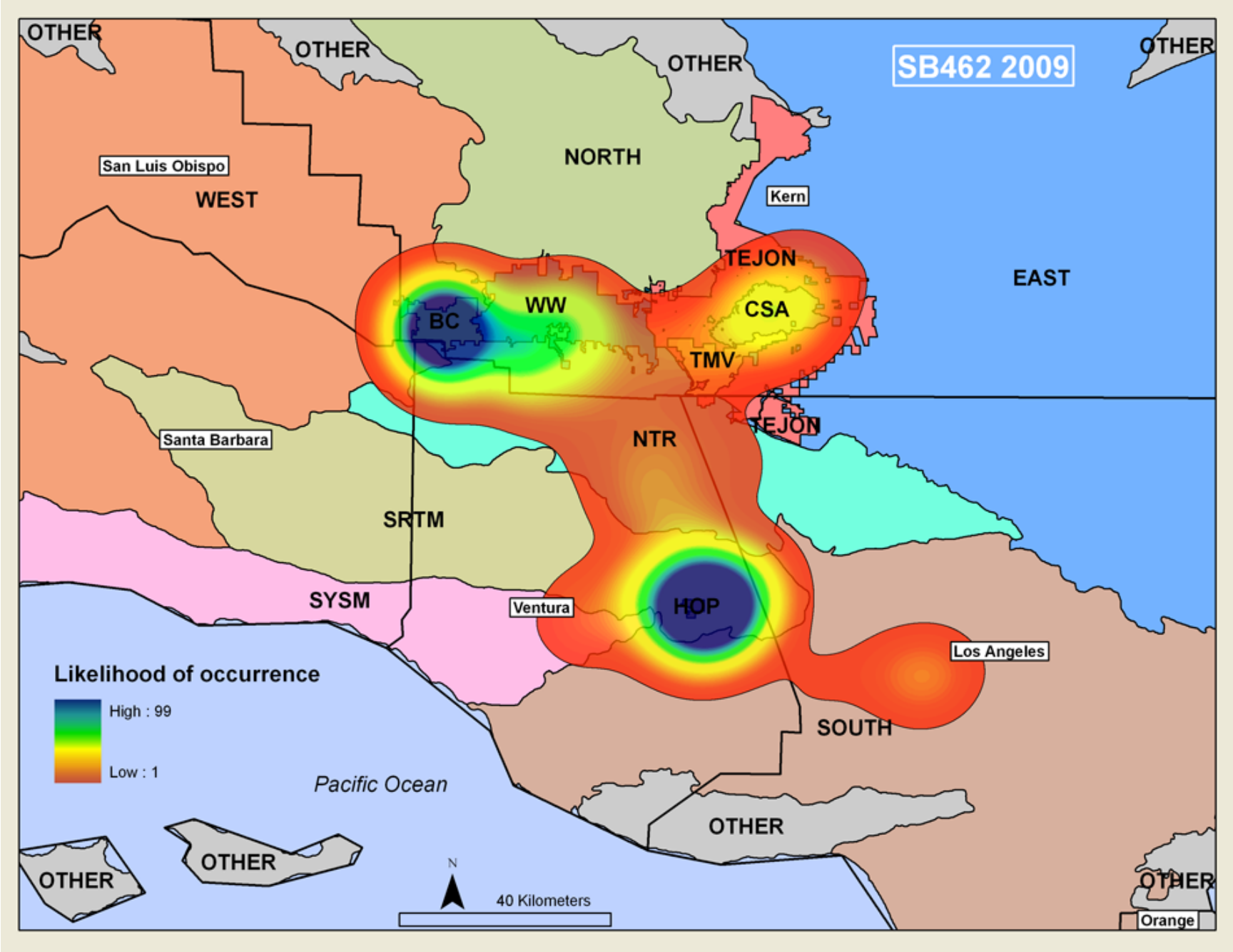
N
40 Kilometers
Orange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SOUTH
Likelihood of occurrence
High : 99
Low : 1
Pacific Ocean
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OTHER
N
40 Kilometers
Orange

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Publishing Network, Tacoma Publishing Service Center

For more information concerning the research in this report, contact the
Director, Forest and Rangeland Ecosystem Science Center
U.S. Geological Survey
777 NW 9th Street, Suite 400
Corvallis, Oregon, 97330
http://fresc.usgs.gov/

Appendix J

TMV Specific and Community Plan Mitigation Monitoring and Reporting Program

Table 1-2. Mitigation Measure Monitoring Program for Tejon Mountain Village

Impact	Mitigation Measure	Time Frame for Implementation	Responsible Monitoring Agency	Date	Initials
4.1 Aesthetics					
#1 **4.1-3**	**MM 4.1-1:** All development shall occur within the development envelope as identified on the Tejon Mountain Village Special Plan No. 1 Map 256, thus ensuring that approximately 80% of the site is preserved as ranchland/open area consistent with the requirements of the Tejon Mountain Village Specific and Community Plan.	Prior to approval of and subdivision map and/or commercial site development plan	Kern County Planning Department; Kern County Building Inspection Division		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department Staff will verify that the Development Envelope has been included on all proposed Tentative Tract Maps, Parcel Maps and/or Commercial Site Development Plans prior to approval.			
#2 **4.1-3**	**MM 4.1-2:** Structures within the village mixed-use area as identified on the Tejon Mountain Village Special Plan No. 1, Map 256 shall be low profile, maintaining context with the surrounding existing setting and visual character of the area.	During Site Plan review for residential structures and during the Director's Hearing for commercial development	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department Staff will verify during site plan review.			

#3 **4.1-3**	**MM 4.1-3:** Grading plans shall be consistent with the grading standards contained in the Tejon Mountain Village Special Plan No. 1, Map 256, as described below: a. Grading shall respect the natural contour of the existing terrain wherever practicable. b. Where grading occurs, the principles of contour grading shall be employed wherever practicable: i. Long linear slopes shall be avoided; ii. Slopes shall be rounded and shaped to simulate the adjoining natural terrain; and iii. Graded slopes shall blend with naturally occurring slopes at a radius compatible with the existing natural terrain. c. Where practicable, retaining walls shall be used to reduce the extent of grading or to protect significant resources or aesthetic features such as rock outcrops and oak trees. Retaining walls shall be designed to minimize the visual impact of the walls. This may include stepping walls to minimize individual wall height, using a "plantable" wall such as a geogrid reinforced block system, landscaping to screen the wall, or using materials or treatments that blend with surrounding terrain. d. Graded slopes shall be re-vegetated with native plant materials or a mixture of introduced grasses and shrubs that are compatible with the native vegetation adjoining the graded slope and consistent with the permitted plant list contained within the Tejon Mountain Village Specific Plan Master Design Guidelines. e. Multi-lot grading to provide multiple home sites and access roads shall be designed with the natural terrain in mind. Long linear slopes and linear parallel terraces shall be discouraged. Cut and fill slopes along the perimeter of multi-lot graded sites shall employ the principles of contour grading as described in the Tejon Mountain Village Special Plan No. 1, Map 256 grading standards. f. Multi-family and resort grading shall use the principles of stepped pads to avoid the unnatural appearance of large flat pads with high adjacent slopes.	Prior to issuing grading permits	Kern County Planning Department; Kern County Building Inspection Division		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.1-3 will be included as a note on any grading permit issued for the proposed project. A. Kern County Planning and Building Inspection Departments will verify during site and grading plan review B. Kern County Building Inspection Division will verify in the field during the construction period.			

#4 **4.1-4**	**MM 4.1-4:** In keeping with the rural mountainous character of Tejon Mountain Village, street lighting shall only be provided at intersections.	During Site Plan Review for residential uses and during the required Director's Hearing for commercial development	Kern County Planning Department; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Project applicant will indicate on all submitted site plans the location of any proposed any street lighting. C. Kern County Planning Staff will verify during the site plan review process and Director's Hearing for Commercial Development.			
#5 **4.1-4**	**MM 4.1-5**: All external lighting fixtures shall be permanently hooded or screened to prevent light and glare from spilling onto adjacent properties. This mitigation measure shall be included on the list of Design Guidelines in the Tejon Mountain Village Specific and Community Plan. The golf courses within Tejon Mountain Village shall not have night lighting. The project shall also comply with the following specific requirements: a. Luminaires will be cut-off-type fixtures (i.e., fully shielded and emitting no light above the horizontal plane) and will be models recommended by the International Dark-Sky Association b. Luminaires will not utilize swivel mounting hardware, which can be inadvertently or intentionally adjusted to cause spillover impacts. Instead, luminaries will be professionally and permanently installed to direct light away from residential units and natural areas adjacent to the proposed project site. c. Fixtures that project upward and horizontally will not be used. d. Luminaires will be focused only where needed (such as on building entrances) and will not provide a general "wash" of light on building surfaces. e. Luminaires will be restricted to no more than 500 lux (1 lumen per square meter) or 50 foot-candles.	Prior to issuance of final occupancy permit	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will review and approve lighting plan and will verify compliance with the plan during site plan review. C. Building Inspector will verify that the approved plan is implemented prior to final occupancy.			

	f. Luminaire lamps will provide good color rendering and natural light qualities. Luminaire intensity will be the minimum feasible for security and maintenance and access safety. g. Luminaires will be placed at the minimum height to reduce the potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. h. Floodlighting will not be used. i. Luminaire mountings will have non-glare finishes j. The project shall comply with any adopted Kern County Dark Sky ordinance if it is more restrictive than the design guidelines and shall be incorporated into the Design Guidelines (Appendix B) of the Tejon Mountain Village Specific and Community Plan.				
#6 **4.1-4**	**MM 4.1-6:** The helicopter pads included in the project shall be equipped with pilot-activated lighting that will limit the illumination of the helipads to during arrivals and departure. Lighting intensity shall be limited to the minimum levels required by the Federal Aviation Administration regulations.	Prior to issuing electrical permits for helicopter pad lighting	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit to the Kern County Building Inspection Department a lighting plan. C. Kern County Planning Staff will review and approve lighting plan and will verify compliance with the plan during site plan review.			
Justification: The impacts to Aesthetics are considered significant and unavoidable. All feasible and reasonable changes or alterations have been required in, or incorporated into, the proposed Project that substantially lessen the potentially significant effect as identified in the Final EIR.					

4.2 Agriculture					
#7 **4.2-1**	**MM 4.2-1.** Prior to approval of any final subdivision map, as appropriate for that map, the project shall utilize conservation easements or deed restrictions and implement funding mechanisms in accordance with the Tejon Mountain Village Specific Plan to ensure that grazing operations are permanently protected on, ultimately, 21,335 acres within the project.	Prior to approval of any subdivision map	Kern County Planning Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify prior to map approval.			
#8 **4.2-2**	**MM 4.2-2:** The proposed Tejon Mountain Village Specific Plan amendment and zone change request for all lands currently enrolled in the Williamson Act program and encumbered by existing contracts, and the removal of these from Agricultural Preserves No. 4 and No. 19, as applicable, shall not become effective until such time as the existing Williamson Act contracts have expired. Any maps adopted as part of the project prior to the expiration of Williamson Act contracts shall clearly show that those areas remain under contract. Upon expiration of the existing contracts, the underlying land use and zoning classifications adopted in conjunction with the proposed Tejon Mountain Village Specific Plan amendment and zone change request and the requested exclusion of the lands from the agricultural preserves shall become effective.	Concurrent with project approval	Kern County Planning Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The proposed general plan amendment, zone change request and exclusion from Agricultural Preserves No. 4 and No. 11, on land currently enrolled in the Williamson Act Program will be placed in suspense pending expiration of the Land Use Contract. C. The identified land shall be shown on the approved Zone Map and Agricultural Preserve Maps and on the Tejon Mountain Village Special Plan No. 1, Map 256.			
#9 **4.2-3**	**MM 4.2-3:** Prior to issuance of occupancy for any residential or commercial use, the project shall prepare an environmental education program to educate residents and resort guests on the value of grazing operations. This program shall include handouts and/or brochures and will be provided to future residents and resort guests. The program will discuss the environmental, fire safety, and other values and benefits associated with continued grazing operations within and adjacent to the project site.	Prior to issuance of final occupancy permits	Kern County Planning Department; TMV Master Dev/ Master POA; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall submit evidence of the environmental education program to the Kern County Planning Department during the site plan review process.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.3 Air Quality					
#10 **4.3-1**	**MM 4.3-1:** Prior to issuance of any building permit, the applicant shall submit evidence, verified by the San Joaquin Valley Air Pollution Control District (SJVAPCD), specific to any portion of site development, that the residential and/or commercial development has a total project construction and operations mitigated baseline below 2 tons per year for NOX (total project construction and operations) and a mitigated baseline below 2 tons per year for PM_{10} emissions (total project construction and operations) within the San Joaquin Valley Air Basin (SJVAB). Required reductions can be achieved from any combination of project design, compliance with the Indirect Source Rule (ISR), and/or a Developer Mitigation Contract (DMC) or Voluntary Emission Reduction Agreement (VERA). If a DMC/VERA is utilized, a copy of the executed agreement and implementing reports shall be provided to the Planning Department to substantiate compliance. As there still could be unmitigated emissions of ROG under this mitigation measure, participation in any air mitigation program adopted by Kern County that provides equal or more effective mitigation than this mitigation measure can be utilized as a replacement for the requirements of this mitigation measure.	Prior to issuing building permits	Kern County Planning Department; San Joaquin Valley Air Pollution Control District; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of a building permit, the applicant shall submit written verification from the San Joaquin Valley Air Pollution Control District that the project has mitigated the NOx and PM 10 emissions for construction and operations to under 2 tons. C. A copy of any Development Mitigation contract or Voluntary Emission Reduction Agreement used as part of the compliance shall be submitted with the written verification form the Air District. D. Kern County Planning Department will verify compliance before issuance of the building permit.			

#11 **4.3-2**	**MM 4.3-2:** Prior to issuance of grading or building permit, the applicant shall implement the following dust control practices during construction. All measures shall be included in a Dust Control Plan that construction contractors shall be required to prepare and submit to the San Joaquin Valley Air Pollution Control District for their approval at least 30 days before any earthmoving or construction activities. Grading or Construction activities shall not commence until the Dust Control Plan has been approved or conditionally approved. a. Structural Demolition i. Water the following areas for the duration of the demolition activities: a. Building exterior surfaces; b. Unpaved surface areas where equipment will operate; c. Razed building materials; and d. Unpaved surface areas within 100 feet of structure during demolition. b. Pre-Activity i. Pre-water the work site and phase work to reduce the amount of disturbed surface area at any one time; and ii. Phase work to reduce the amounts of disturbed surface area at any one time. c. Active Operations i. Effectively control fugitive dust emissions from all land clearing, grubbing, scraping, excavation, leveling, grading, cut-and-fill, and demolition activities by applying water or presoaking; ii. Construct and maintain wind barriers, and apply water or dust suppressants to the disturbed surface areas; iii. Apply water or dust suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas; iv. Limit or expeditiously remove the accumulation of mud or dirt from adjacent public roads at least once every 24 hours during all operations. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is also expressly forbidden.); and v. Operate construction equipment no longer than 8 cumulative hours per day.	Prior to issuance of grading or building permits	Kern County Building Inspection Division; San Joaquin Valley Air Pollution Control District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of grading permits, the applicant will submit evidence to the Kern County Building Inspection Division that the San Joaquin Valley Air Pollution Control District has approved a Dust Control Plan for the proposed grading or building permit. C. The Kern County Building Inspection Department will verify compliance in the field during the construction period.			

	d. Inactive Operations, Including after Work Hours, Weekends, and Holidays i. Effective stabilize all disturbed areas, including storage piles that are not being actively utilized for construction purposes, of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover; ii. Apply water or dust suppressants on disturbed surface areas iii. Restrict vehicle access to maintain the visible crust; and iv. Shut down equipment when not in use for extended periods of time, and minimize idling time (i.e., 15 minute maximum). e. Temporary Stabilization of Areas that Remain Unused for 7 or More Days i. Restrict vehicular access and apply and maintain water or dust suppressants at all un-vegetated areas; ii. Establish vegetation on all previously disturbed areas; iii. Apply gravel and maintain at all previously disturbed areas; and iv. Pave previously disturbed areas. f. Unpaved Access and Haul Roads, Traffic, and Equipment Storage Areas i. Effectively stabilize all onsite unpaved roads and offsite unpaved access roads of dust emissions using water or chemical stabilizer/suppressant; ii. Post speed limit signs of not more than 15 miles per hour at each entrance, and again every 500 feet; iii. Apply water or dust suppressants to vehicle traffic and equipment storage areas; and iv. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1%. g. Wind Events i. Apply water to control fugitive dust during wind events, unless unsafe to do so; and ii. Cease outdoor construction activities that disturb the soil whenever visible dust emissions cannot be effectively controlled.	

	h. Outdoor Handling of Bulk Materials i. Apply water or dust suppressants when handling bulk materials; and ii. Install and maintain wind barriers with less than 50% porosity, and apply water or dust suppressants. i. Outdoor Storage of Bulk Materials i. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, effectively stabilize said piles of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant; ii. Cover storage piles with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action; iii. Install and maintain wind barriers with less than 50% porosity around the storage piles, and apply water or dust suppressants; and iv. Use a three-sided structure (< 50% porosity) that is at least as high as the storage piles. j. Onsite Transporting of Bulk Materials i. Limit vehicle speed on the work site; ii. Load all haul trucks such that the freeboard is not less than 6 inches when transported across any paved public access road; iii. Apply a sufficient amount of water to the top of the load to limit visible dust emissions; and iv. Cover haul trucks with a tarp or other suitable cover. k. Offsite Transporting of Bulk Materials i. Clean or cover the interior of emptied truck cargo compartments before leaving the site; ii. Prevent spillage or loss of bulk materials from holes or other openings in the cargo compartment's floor, sides, and tailgates; iii. Cover haul trucks with a tarp or other suitable cover or load them such that the freeboard is not less than 6 inches when transported on any paved public access road to or from the project site and apply a sufficient amount of water to the top of the load to limit visible dust emissions; and iv. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1%.	

	l. Outdoor Transport using a Chute or Conveyor i. Fully enclose chute or conveyor; ii. Use water spray equipment to sufficiently wet the materials; and iii. Wash or screen transported materials to remove fines (PM10 or smaller). m. Valley Fever Mitigation i. All disturbed areas, including storage piles that are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover. ii. Crews shall be required to use respirators during project clearing, grading, and excavation operations in accordance with California Division of Occupational Safety and Health regulations. iii. Construction roads shall be paved or treated with environmentally safe dust-control agents. iv. Where acceptable to the fire department, weed growth shall be controlled by mowing instead of discing, thereby leaving the ground undisturbed and with a mulch covering. v. During rough grading and construction, the access way into the project site from adjoining paved roadways shall be paved or treated with environmentally safe dust-control agents. vi. Existing residents located near later phases of construction shall be notified prior to soil-disturbing activities and advised on reducing exposure to dust potentially containing valley fever fungus through methods such as limiting outdoor activities, keeping windows closed, and frequently cleaning or replacing air intake filters for air conditioning systems.				
#12 **4.3-2**	**MM 4.3-3:** During construction, the owners, developers, and/or successors-in-interest shall comply with all other requirements of San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive Dust Rules).	During grading	San Joaquin Valley Air Pollution Control District; Kern County Building Inspection		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process.			

#13 **4.3-2**	**Mitigation Measure 4.3-4**: Tejon Mountain Village shall require the use of alternative fuel technologies for construction vehicles equipment (as defined by the San Joaquin Valley Air Pollution Control District as, construction vehicles used for land clearing, excavation related to construction, land leveling, grading, cut and fill grading, and the erection or demolition of any structure) by including language in construction bid specifications and weighting the use of alternative fuel technologies in the selection of construction contractors, or provide evidence to the Kern County Planning Department why this is infeasible. During all grading and construction activities, the following requirements shall be imposed on construction equipment: a. Tier 2 or Tier 3 engines shall be used on all equipment; b. Engines on all off-road construction equipment must be no more than 10 years old or have equivalent emissions of an engine 10 years old or newer. This measure excludes water trucks; c. Diesel particulate filters shall be required on many pieces of equipment; d. Diesel oxidation catalysts shall be required on all equipment; e. Global positioning systems shall be used to guide grading equipment. f. All diesel-fueled engines used in construction and grading shall have clearly visible tags issued by the onsite designee of the applicant showing that the engine meets these conditions. As feasible, Lake Drive will be utilized by construction equipment accessing the Project site. Should use of the Rising Canyon access point be necessary via the Fort Tejon interchange at Interstate 5, the Project applicant will prepare, and shall provide to ETUSD for review and comment, a Construction Traffic Control Plan that identifies the safety measures that will be utilized to minimize interference with the students and faculty of El Tejon school. Safety measures may include flag persons, traffic cones, limited hours of operation, etc.	Prior to the issuance of grading plans	Kern County Building Inspection; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.3-4 will be included as a note on all grading plans. C. Kern County Planning Department will verify the note prior to issuance of grading permits. D. Prior to issuance of grading permits, the applicant shall submit evidence of implementation of this mitigation measure to Kern County Planning Department. E. Kern County Building Inspection Department will verify compliance in the field.			

#14 **4.3-2**	**MM 4.3-5: Material Selection and Disposal/Recycling.** The selection of sustainable construction materials reduces emissions associated with the extraction, processing, and transportation of materials and may reduce waste sent to landfills. The following measures are required of builders and custom lot owners in choosing and disposing of construction materials for development on the Tejon Mountain Village project site. a. Builders, developers, and custom lot owners are required to use low volatile organic compound finishes as practicable including, but not limited to, those found in paints and coatings, adhesives and sealants, carpet, and composite woods. b. Builders, developers, and custom lot owners are required to comply with recycling measures for construction waste, including waste and unused materials generated during the construction and building process, and existing waste and unused materials on site prior to construction. Recycling options may include the use of onsite spoils and bulk site clearing materials for existing project needs, such as backfill, mulch, erosion, and sedimentation control; donation of materials to charitable organizations; or exported for use in other local construction projects in the project area. c. A centralized information repository shall be maintained in the Eco-House on site to identify which construction materials can be recycled and to provide direction as to which sources accept recyclable building and construction materials. d. Pending completion of an Eco-House, Developer shall provide a centralized information repository to identify the availability of recycled building materials in the area.	Prior to issuing grading or building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.2-2 will be included as a note on all grading or building permits. C. Kern County Planning Department will verify the note prior to issuance of grading or building permit. D. The Kern County Building Inspection Department will verify prior to issuance of grading permits (for construction disposal and recycling measures) and building permits (for Design Guidelines)			

	In addition, the following measures are included to encourage builders and custom lot owners in choosing and disposing of materials for development at the Tejon Mountain Village project site. a. Tejon Mountain Village Master Design Guidelines include affirmative direction to builders and custom lot owners regarding the use of recycled building materials, such as timber beams, barn siding, brick, concrete, etc., whenever practicable. b. The following materials should be avoided whenever possible: polyvinyl chloride (PVC), wood treated with copper chromium arsenate (CCA), and persistent bioaccumulative toxic (PBT) chemicals such as mercury, lead, or cadmium found in products such as some paints, varnishes, caulks, electrical switches and thermostats, fluorescent bulbs, solders, and vinyl. c. Preference should be given to sustainable and environmentally friendly building materials. d. Preference should be given to building materials and products that are locally and regionally extracted and manufactured when available. Information regarding availability of such materials shall be maintained at the Eco-House on the project site. e. Roofing and paving materials and systems should maximize efficient energy use and natural rainwater infiltration. f. Building or construction materials that are not recyclable should be hauled off site to the nearest waste disposal facility rather than transporting such materials farther from the project site, thereby generating increased emissions from waste transportation. Preference shall be given to local construction haulers or waste disposal services, if available.	

#15 **4.3-3**	**MM 4.3-6:** The project applicant shall incorporate measures into the design and operation of the proposed project to ensure energy efficiency that is 25% beyond what is required by 2008 Title 24 Standards on a time dependant valuation basis, which shall be verified by an energy audit. a. **Energy Efficiency.** Custom lot owners and builders shall be subject to energy efficiency requirements of 25% above 2008 Title 24 Standards on a time dependant valuation basis, which increase energy efficiency and reduce emissions. i. An Energy Incentive Program for builders and custom lot owners shall require at least 25% efficiency beyond what is currently required in 2008 Title 24 Standards on a time dependant valuation basis. To meet this efficiency requirement, builders and custom lot owners may select from the following but are not limited to the list of possible items below. An energy audit shall be conducted in order to verify that this requirement is met. Consideration shall be given for computer modeling tools and simulation programs that shall help identify the best combination of energy-efficient strategies, including passive solar heating, cooling, and daylighting of interior spaces, and to maximize winter sun exposure. a. Energy Star appliances, including clothes washers, dishwashers, refrigerators, air conditioning units, and water heaters, may be installed. These appliances use 10–15% less energy and water than standard models (U.S. Environmental Protection Agency 2008a). b. Energy Star qualified lighting products may be installed for indoor and outdoor lighting in residential and commercial buildings. Energy Star qualified lighting can use up to 75% less energy than standard lighting (U.S. Environmental Protection Agency 2008b).	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide Kern County Building Inspection Division an energy audit detailing how the proposed building is meeting the required energy efficiency standards. C. The applicant shall provide Kern County Planning Department Building Inspection proof of water efficiency measures and the assigned Maximum Applied Water Allowance for each building and home D. The applicant shall provide Kern County Planning Department proof of education and outreach program E. The applicant shall provide Kern County Planning Department Services proof that fire places will not be wood burning. F. MM 4.3-6 will be incorporated as a condition of approval for any subsequent discretionary action and included in a note on all approved final subdivision maps and approved site plans. G. Kern County Planning Department will verify the note prior to approval.			

	ii. Wood-burning fireplaces shall be prohibited in all structures (residential and commercial). High-Efficiency Particulate Arresting (HEPA) filters are required on all under-fired charbroilers in all restaurants. iii. Builders and custom lot owners in Tejon Mountain Village shall be required to site, orient, and design buildings to optimize conditions for natural heating, cooling, and day lighting of interior spaces, and to maximize winter sun exposure. The guidelines below are provided as a menu approach to selecting the most practical design features for the building or home to achieve the required level of energy efficiency. a. Buildings and homes designed and oriented such that one axis of each structure is at least 1.5 times longer than the other and such that the longer axis is within 15 degrees of the geographical east/west axis generally achieve optimal conditions for natural heating and cooling. Walls enclosing spaces such as garages or porches are not included in this measurement. (This design option is most practical for custom home projects.) b. Homes oriented so that the south side of the home is within 30 degrees of due south facilitate maximum solar gain. c. By clearing the southern exposure of buildings of large obstacles, such as tall buildings or tall trees that block sunlight, interior spaces will achieve maximum solar gain. Limited building exposure to the north will minimize the effect of winter cold on interior spaces. d. South-facing windows that receive full sun can be shaded with some combination of landscaping, overhangs, shutters, and solar window screens to help optimize southerly solar heat gain in winter and shading in summer.	

	e. By placing habitable rooms on the south side of buildings and by placing rooms with minimal heating and lighting requirements (e.g., closets, corridors, laundry, garage, utility rooms) along the north side of buildings and homes, natural heating and cooling can be optimized. f. The placement of windows on buildings or homes directly impacts the natural heating and cooling functions of the structure. To optimize southern solar heat gain, major window openings can be located on the southeast, south, and southwest sides of the building or home. To minimize cold winter exposure, windows on the north, east, and west facing walls can be kept small in size. iv. Heating and cooling optimization shall be required through building design to minimize the need for mechanical cooling and heating. The following measures shall be provided to guide building design and material selection. a. Top-quality windows provide added insulation for buildings and homes, keeping interior spaces cool in the summer and warm in the winter. Building glazing can be optimized by evaluating the R-value, visible light transmittance, and solar heat gain coefficient of the glass. b. Thermal mass can be incorporated in floors and walls to serve as a heat sink for direct passive solar heating strategies and to minimize indoor temperature fluctuations. Radiant floor heating produced by a solar hot water system can also assist in maintaining indoor temperatures and comfort. c. Exterior sun controls and shading techniques such as trees, awnings, or trellises, as opposed to interior controls such as drapes and shutters, will block light and heat before they penetrate the building or home, thereby reducing energy demand from mechanical cooling and heating.	

	d. By strategically locating shade trees, trellises, awnings, exterior blinds, or shutters, the use of glazing can be minimized and shaded. e. Skylids can be used for direct heat gain. Skylights can be used for natural lighting and indirect (i.e., solar tube) to eliminate overheating and glare. f. Building openings can be arranged to catch cooling summertime breezes. Outlet openings can be sized and located so as to accelerate the flow of breezes through habitable rooms. g. Vegetation, water ponds, or fountains placed outside inlet openings will pre-cool air flow into buildings. Asphalt driveways and other "heat sinks" (area or object that absorbs and dissipates heat) placed immediately outside inlet openings will trap heat and prevent cool air from flowing into buildings and homes. h. Reflective foil and airspace underneath the roof sheeting can be used to reduce heat penetration. i. Architectural devices such as cupolas, belvederes, operable skylights, clerestory windows, and thermal chimneys at roof peaks can be incorporated to extract heat from interior spaces. j. Light-colored, nonreflective finishes can be used and balanced with glare control for outdoor sidewalks, driveways, patios, and parking areas to keep surfaces cool and reduce the potential for "heat sinks." v. Natural lighting shall be optimized to provide daytime interior lighting and minimize the need for artificial lighting. The following measures are provided to guide natural lighting optimization: a. Clerestory windows, roof monitors, and skylights can be installed for overhead natural lighting; however, consideration should be given to potential overheating from skylights. b. Reflective ceilings and light-colored interior surfaces will increase interior lighting.	

	c. Shading devices can be incorporated to minimize direct-beam sunlight penetration into workspaces. Task lighting can supplement natural lighting in workplaces. d. Lighting and control systems, such as automated natural light-actuated controls that adjust depending on the amount of natural light entering the interior space, can be arranged for maximum flexibility and adjustability depending on the layout of the building or home and the natural exposure of the structure to natural daylighting. e. Maximum daylighting can be achieved by zoning lighting so that lights near windows can be off at times when lighting further from the window is necessary. b. **Solar Energy.** Solar energy technology shall be utilized in the Tejon Mountain Village area to maximize power obtained from renewable energy sources. Active solar energy systems such as photovoltaic installations and solar hot water systems provide access to renewable energy. i. All community amenity buildings shall be equipped with active solar energy systems. ii. All pools and spas shall be equipped with solar hot water systems. iii. Active solar dryers shall be installed for the wastewater plant. iv. All homebuyers shall be provided the option to include a photovoltaic array system as a home design feature. v. All single-family residences shall include capacity for an electric-vehicle recharger, or the equivalent, in an appropriate location of the garage. c. **Water Conservation.** Water efficiency measures shall be implemented in the Tejon Mountain Village area to minimize water demand and maximize use of recycled water. Each building or home shall be assigned a Maximum Applied Water Allowance budget that must not be exceeded.	

	i. A Water Wise Program shall be implemented within Tejon Mountain Village that includes all feasible mitigation measures that will reduce water and energy use. Builders, developers, and custom lot owners shall be required to implement water and energy use reduction measures such as interior fixtures, tankless water heaters, and low-flow plumbing to assist in complying with the Maximum Applied Water Allowance for each land use. Installation of high-efficiency plumbing fixtures that meet the definition of high-efficiency toilets and high-efficiency clothes washers should be incorporated when feasible. a. Homeowners shall be required to select plants from the Tejon Mountain Village Landscape Plant List so that the estimated applied water use recommended for the project site does not exceed the Maximum Applied Water Allowance budget that is assigned to each lot or home. Similar species may be approved by the Homeowner's Association Design Review Committee. b. The following measures regarding plant selection and placement are required and shall be enforced through review of landscape plans: i. To the extent feasible, native species and natural vegetation should be protected and preserved. ii. Stockpiling of top soil for use in restoration of native and natural vegetation is required. iii. Preference should be given to selecting water-efficient plants. iv. Selection of plants from local and regional landscape program plant lists (e.g., California Friendly Landscapes, Lush & Efficient) should be considered. v. Plants with similar water needs should be grouped into distinct hydrozones (i.e., very low, low, medium, or high water needs).	

	c. Plants should be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Invasive species of plants, as listed in the Prohibitive List contained in the Tejon Mountain Village Master Design Guidelines, shall not be planted within the project area. The following additional guidelines are highly recommended: i. The Sunset Western Climate Zone System should be used, which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate. ii. Horticultural attributes of plants should be considered (e.g., mature plant size, invasive surface roots) to minimize damage to property or infrastructure such as buildings, sidewalks, power lines, etc. iii. Solar orientation of plants placement should be considered to maximize summer shade and winter solar gain. d. The following standards are required for all turf areas to reduce irrigation runoff and overspray and to improve irrigation efficiency: i. Installation of long, narrow, or irregularly shaped turf areas less than 8 feet wide in all directions is not permitted unless such areas are irrigated with subsurface irrigation or other low-volume irrigation such as surface drip. ii. Turf areas irrigated with overhead spray and rotary heads should be set back a minimum of 24 inches from curbs, driveways, sidewalks, or any other areas that may direct runoff and overspray onto the pavement. The landscape buffer created by the setback may be covered with mulch, permeable materials, or vegetated with plant material on drip irrigation or other low-volume irrigation.	

	iii. Preference should be given to water-efficient turf species that require minimal use of pesticides and fertilizers and are resistant to disease. iv. A minimum 3-inch layer of mulch should be applied on all exposed soil surfaces of planting areas except in turf areas and creeping or rooting groundcovers. In mulched planting areas, use of drip irrigation systems is required. e. The following soil management practices shall be considered and evaluated for appropriate implementation in landscape design to minimize water runoff and maintain plant health: i. Soil texture (percent clay, silt, and sand); ii. Approximate soil infiltration rate; iii. pH levels; iv. Total soluble salts; and v. Other physical or chemical properties of soil relevant to improving water efficiency and maintaining plant health, such as conductivity and levels of nitrogen, phosphorus, potassium, calcium, magnesium, sodium, and sulfur. f. The water used for water features on the Tejon Mountain Village project site shall be managed according to the following requirements: i. Recirculating water shall be used for decorative water features. ii. When available, recycled water shall be used as the source for water features on golf courses, hotels, and commercial centers. iii. Surface area of water features shall be included in the Maximum Applied Water Allowance calculation. The evaporation rate for all water features shall be equivalent to the evapo-transpiration rate of a high plant water use. iv. Pool and spa covers are required.	

	g. Irrigation shall be designed to maximize water efficiency and meet Maximum Applied Water Allowance requirements. The following irrigation efficiencies shall be required: i. For optimum water efficiency, the irrigation system shall be designed to match plant type and not cause the home or lot to exceed the Maximum Applied Water Allowance. ii. The irrigation system shall be designed to prevent runoff, low-head drainage, overspray, or other similar conditions that cause irrigation water to flow onto adjacent properties, nonirrigated areas, hardscapes, roadways, or structures. iii. Soil types and infiltration rates shall be considered in irrigation system design. iv. Irrigation system design shall conform to the hydrozones of the landscape design plan. v. Trees shall be placed on separate valves from shrubs, groundcovers, and turf areas, where feasible. vi. Head-to-head coverage is required when designing the sprinkler system to ensure uniform water application. Consideration shall be given to the prevailing wind direction and speed to make necessary adjustments. The coefficient of uniformity should be as close to 1.0 as possible. vii. Long, narrow, or irregular-shaped landscape areas and median islands or strips less than 8 feet wide shall be irrigated with subsurface irrigation or other low-volume irrigation, such as surface drip. viii. "Smart" controllers such as weather-based irrigation controllers or other self-adjusting irrigation controllers are required for all irrigation systems and must be able to accommodate all aspects of the landscape and irrigation design plans.	

	ix. Placement of valves as close as possible to the point of connection of the water supply is required to minimize water loss caused by an emergency situation (e.g., water main break or repair). x. Sensors that suspend irrigation during unfavorable weather conditions (i.e., rain, freeze, wind) are required on all irrigation systems. d. **Educational Outreach.** An education and outreach program to the existing and future Tejon Mountain Village community shall be provided to encourage the sustainable design features offered by Tejon Mountain Village. The educational outreach program includes the following components: i. Environmental education program to promote advantages of water conservation, energy efficiency, limited site disturbance, open space preservation, and renewable energy technologies. ii. A temporary "Eco-House" to be built on site as a prototypical residential green structure. The model home will function as a resource center to showcase green technologies and serve as a centralized information repository for sustainable development technologies, resource materials, and best practices for sustainability. Eventually, the model eco-house will be sold as part of the model home sales for Tejon Mountain Village. iii. Coordination with the Tejon Ranch Conservancy and other similar organizations such as the Mountain Lion Foundation, The Nature Conservancy, Endangered Habitats League, The Sierra Club, the Audubon Society, and the Natural Resources Defense Council to prepare, periodically review, and produce materials for the educational program. iv. Conservation education and citizen awareness program for the open space areas, informing residents and guests of the natural resource values and vulnerabilities within the Tejon Mountain Village open space areas.	

#16 **4.3-3**	**MM 4.3-7:** A transit connection is included on site, which is accessible by local and regional transit routes if desired by transit operator.	Prior to approval of any Site Development Plan for the Village Mixed Use Center	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Concurrent with the submittal of the first commercial site development plan in the Village Mixed Use Center, the applicant shall indicate where the transit connection is to be located. C. Kern County Planning Staff shall verify the proposed location is accessible by local and regional transit routes. D. The proposed location shall be included as a condition of approval for any approved commercial site development plan.			
#17 **4.3-3**	**MM 4.3-8:** Best available alternative fuel technology is required for community service vehicles.	Prior to issuance of certificates of occupancy for the Golf Course Cart Barn and Community Maintenance Buildings	Kern County Engineering & Services Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process.			

#18 **4.3-3**	**MM 4.3-9:** Builders, developers, and custom lot owners are required to include high-speed communication technology to encourage telecommuting and working from home.	Prior to issuance of final occupancy permit for residential units and hotels.	Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide the Kern County Building Inspection Department proof of the high-speed communication technology required of builders, developers, and custom lot owners has been included in all residential dwellings. C. Building Inspector shall verify prior to issuance of final occupancy permit.			
#19 **4.3-3**	**MM 4.3-10:** Commercial areas and amenity buildings shall be designed to be accessible by pedestrians, bicyclists, and community electric vehicles.	Prior to approval of Commercial Site Development Plans	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will review the accessibility by pedestrians, bicyclists and community electric vehicles for compliance during review of the Commercial Site Development Plans.			

#20 **4.3-3**	**MM 4.3-11:** The commercial area shall include bicycle storage racks.	Prior to approval of the Commercial Site Development Plan and issuance of commercial building permits	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will verify during review of the Commercial Site Development Plan that bicycle storage racks are included.			
#21 **4.3-3**	**MM 4.3-12:** Signage shall be provided on the parking lot of a portion of the commercial site identifying a maximum of 10 parking places that can be used by project commuters as a park-and-ride facility.	Prior to approval of the Commercial Site Development Plan and Prior to issuance of final occupancy permits for commercial buildings	Kern County Planning Department; Kern County Building Inspection; TMV Design Review Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will verify during review of the Commercial Site Development Plan that the required parking places are included. C. Building Inspector will verify in the field that the required parking places have been included prior to issuance of any final occupancy permit for commercial buildings.			

#22 **4.3-3**	**MM 4.3-13:** Signage shall be provided at parking spaces for employee use in each commercial area nearest to the employee entrance identifying those spaces as preferential parking reserved for carpool/vanpool usage. Signage shall also be provided identifying loading and unloading areas for transit and vanpools.	Prior to approval of the Commercial Site Development Plan and Prior to issuance of final occupancy permits for commercial buildings	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will verify during review of the Commercial Site Development Plan that the required parking places are included. C. Building Inspector will verify in the field that the required parking places have been included prior to issuance of any final occupancy permit for commercial buildings.			
#23 **4.3-3**	**MM 4.3-14:** In compliance with applicable law, signage shall be placed on parking spaces in the commercial area nearest to the entrance of the commercial retail uses identifying them as preferential parking for alternative fuel vehicles (hybrid (electric/gas), liquefied petroleum gas, or biodiesel).	Prior to approval of the Commercial Site Development Plan and Prior to issuance of final occupancy permits for commercial buildings	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Staff will verify during review of the Commercial Site Development Plan that the required parking places are included. C. Building Inspector will verify in the field that the required parking places have been included prior to issuance of any final occupancy permit for commercial buildings.			

#24 **4.3-4**	**MM 4.3-15:** Construction activities within 1,500 feet of any school will be limited to after-school hours, weekends, or times when the school is not occupied unless a written agreement is provided from the school district allowing for other hours. At least 14 days prior to the commencement of any construction activity that would take place within 1,500 feet of El Tejon Middle School, the Project applicant shall provide for El Tejon Unified School District's review and comment on a Construction Operations Plan that identifies the activities to be undertaken, the type of equipment to be used, and the scheduled hours of use for each type of equipment. A setback area of 300 feet from areas with more than one potential source of Toxic Air Containments shall be required for all residential structures. A setback area of 500 feet from Interstate 5 shall be required for all sensitive land uses, including schools, community centers or other community gathering places as determined by the Planning Director.	Prior to the issuance of any grading permit or building permit.	Kern County Planning Department; Kern County Building Inspection; TMV Design Review Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. For any project located within 1,500 feet of El Tejon Middle School, the applicant shall provide to the Kern County Building Inspection Division a copy of the Construction Operations Plan approved by the El Tejon Unified School District. C. Kern County Planning Department shall review the Construction Operations Plan prior to issuance of the permit. D. The applicant shall indicate all setback areas on the submitted site plan reviews. E. Kern County Planning Staff shall verify compliance during site plan review. F. MM 4.3-15 shall appear as a note on all grading and building permits issued.			
#25 **4.3-5**	**MM 4.3-16:** If odors from any equestrian facility become a nuisance, as determined by the Kern County Environmental Health Services Department, the project applicant shall impose additional manure management practices, as required by Kern County Environmental Health Services Department.	During operations	Kern County Environmental Health Services Department; TMV Master Developer/Master Property Owners Association		

		Steps to Compliance: A. MM 4.3-16 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. If requested, the applicant shall provide Kern County Environmental Health Services Department proof of implementation of additional manure management practices C. If requested, the applicant shall provide the Kern County Planning Department proof of additional manure management practices.			
#26 **4.3-5**	**MM 4.3-17:** If odors from the water reclamation facility become a nuisance, as determined by complaints to the Kern County Environmental Health Services Department and the SJVAPCD, the Kern County Environmental Health Services Department and SJVAPCD shall consult to determine additional odor control measures to impose, including if necessary, an odor biofilter that would be installed by Tejon Castac Water District.	During operations	Kern County Environmental Health Services Department; Kern County Planning Department; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. MM 4.3-17 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. If requested, TCWD shall provide proof of implementation of additional odor control measures imposed by Kern County Environmental Health Services Department in consultation with SJVAPCD C. If requested, the applicant shall provide to Kern County Planning Department proof of consultation and approved additional odor control measures.			

#27 **4.3-8**	**Mitigation Measure 4.3-18:** Prior to the issuance of building permits for residential or commercial construction (with the exception of the gate house, and sales and marketing facility), a focused greenhouse gas report shall be submitted that identifies the measures (regulatory or applicant-implemented, in all sectors relevant to project GHG emissions, including but not limited to cleaner fuels and more efficient cars and trucks, cleaner energy from the grid, more energy-efficient building materials and standards used onsite, emission offsets, applicant-funded offsite energy conservation improvements to existing homes and structures, etc.) to confirm that the project is reducing by 29% in relation to business as usual (2008 base year) its CO_2 equivalent emissions as quantified in the Draft Environmental Impact Report and applied to the final number of houses or square footage and type of commercial constructed for each site. The focused greenhouse gas report shall be submitted to the San Joaquin Valley Air Pollution Control District for review and comment regarding the methodology used to quantify greenhouse gas reductions. The report can be for an individual house, multiple structures, or for a phase of a tract. Any mitigation program for the reduction of greenhouse gases adopted by Kern County that can be implemented for the specific project site and that provides equal or more effective mitigation than this mitigation measure can be utilized by the applicant as a replacement for the requirements of this mitigation measure. In addition, the project shall comply with any Climate Change Action Plan that is adopted by the Board of Supervisors prior to issuance of building permits and any other relevant State or Federal regulations on climate change.	Prior to issuance of building permits for residential or commercial construction	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will develop a focused greenhouse gas report and will submit the report to the SJVAPCD for review and comment. Prior to issuing building permits, the applicant will provide Kern County Planning Department proof of the reviewed greenhouse gas report. C. The greenhouse gas report will be utilized to confirm that the project is reducing its CO_2 equivalent emissions by 29% in relation to business as usual. Project design features used to achieve the reduction shall be verified as incorporated into all precise development plans, final parcel maps and subdivision maps.			

#28 **4.3-8**	**MM 4.3-19:** Tejon Mountain Village shall require the use of alternative fuel technologies for grading construction vehicles by including language in construction bid specifications and weighting the use of alternative fuel technologies in the selection of grading construction contractors or provide evidence to the Kern County Planning Department why this is infeasible. Refer to Mitigation Measure 4.3-4 for details on alternative fuel use in grading equipment.	Prior to issuance of grading permits	Kern County Planning Department Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.3-19 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval.			
#29 **4.3-8**	**MM 4.3-20:** Tejon Mountain Village shall maintain a centralized information repository for available recycled building materials. Recycled building materials such as timber beams, barn siding, brick, and concrete shall be incorporated where practicable. Refer to Mitigation Measure 4.3-5 for details on recycled building materials and recycling of construction waste.	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department to verify prior to issuance of building permits			

#30 **4.3-8**	**MM 4.3-21:** Prior to the issuance of grading or building permits, the proponent shall identify where all construction equipment will be stored. The location of this storage area shall appear as a note on any grading or building permit issued for the site. In areas not subject to mass grading, builders and custom lot owners shall be required to flag the smallest site disturbance area possible and restrict storage of construction equipment to these areas. Builders and custom lot owners shall also be required to ensure that grading of areas includes diversion of flow to permeable areas. Builders and custom lot owners shall be required to manage and replace oak trees consistent with the Oak Tree Management Plan, which shall be adopted with the Tejon Mountain Village Specific Plan and Community Plan.	Prior to issuance of grading and landscape permits	Kern County Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection to verify during grading and landscape plan review			
Justification: The impacts to air quality are considered significant and unavoidable. All feasible and reasonable changes or alterations have been required in, or incorporated into, the proposed Project that substantially lessen the potentially significant effect as identified in the Final EIR.					

4.4 Biological Resources					
#31 **4.4-1**	**MM 4.4-1:** The following shall be implemented prior to the issuance of any certificate of occupancy for the site: a. Hunting within the project site shall be limited to guided hunts, generally as required to control wildlife and non-native, invasive species (e.g., wild pigs). All participants in any such onsite population management efforts shall be educated in the identification and behavior of the California condor, golden eagle, bald eagle, and prairie falcon, and supervised by a trained hunting guide to avoid any accidental encounter with these species. In addition, non-permitted hunting of any wildlife species shall be strictly prohibited, which will also be subject to enforcement by the project Conservation Managers and trained hunting guides. Pursuant to the lead ammunition ban that was implemented over the entire Tejon Ranch beginning January 1, 2008, only non-lead ammunition shall be used at all times within the project site during hunts of any kind.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Developer/Master Property Owners Association; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of residential certificates occupancy, the applicant shall provide evidence of educational material informing hunting participants of identification and behavior of the California condor, golden eagle, bald eagle, and prairie falcon to Kern County Building Inspection Department. C. The Kern County Planning Department will verify compliance prior to issuance.			

	b. An amendment to the existing agreement between the County and the U.S. Department of Agriculture (USDA) shall be executed or other implementation mechanism as approved by the Planning Department , to provide funding to cover the costs for depredation management associated with the on-site implementation of the Tejon Mountain Village Community and Specific Plan.				
#32 **4.4-1**	**MM 4.4-2:** No new aboveground high-voltage towers or power lines shall be built as part of the project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project, or the project requires aboveground structures for the installation of underground utility lines, best management practices to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the "Avian Protection Plan Guidelines" prepared by the Edison Electric Institute's Avian Power Line Interaction Committee and United State Fish and Wildlife Service (2005). The "Avian Protection Plan Guidelines" shall be used in conjunction with "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1994" (Avian Power Line Interaction Committee 1994) and "Mitigating Bird Collisions with Power Lines: The State of the Art in 2006" (Avian Power Line Interaction Committee 2006), or the most current editions of these documents at the time of the installation or construction of these structures. Implementation of these guidelines is the responsibility of the Project Biologist during construction of master improvements and the appropriate project Conservation Manager according to the location of the activity thereafter.	Prior to approval of TTMs that include electrical transmission lines	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-2 will be included as a note on all approved tentative tract maps maps and approved site plans. C. The Kern County Planning Department will verify the note prior to approval. D. During TTM review, the applicant shall provide evidence to Kern County Planning Department that either no new aboveground high-voltage towers or power lines shall be built as part of the project or if existing utilities are to be relocated that construction specifications are consistent with : "Avian Protection Plan Guidelines" prepared by the Edison Electric Institute's Avian Power Line Interaction Committee and United State Fish and Wildlife Service (2005); the "Avian Protection Plan Guidelines" shall be used in conjunction with "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1994" (Avian Power Line Interaction Committee 1994) and "Mitigating Bird Collisions with Power Lines: The State of the Art in 2006" (Avian Power Line Interaction Committee 2006)			

#33 **4.4-1**	**MM 4.4-3:** Tejon Mountain Village, LLC shall retain professional environmental specialists to create and disseminate a condor educational curriculum that shall include information concerning the life history of the California condor, where condors potentially occur within the Tejon Mountain Village site, prohibited behaviors related to condors such as the pursuit, capture, harassment, and all other potential direct interaction of the species. The information shall also identify types of microtrash that could be ingested by adult breeding condors and describe measures to eliminate microtrash on and near all construction sites, recreational areas, roads, and backcountry locations where human presence has occurred. The education program shall include training of key personnel at the Ranch, appropriate signage at trailheads or entrances to project open space areas, and dissemination of pertinent information at onsite nature centers or other public areas. The focus will be to educate all Tejon Mountain Village construction and work crews, residents, and guests, particularly those engaging in recreational activities such as hiking that could put them in close proximity to ridgelines and other areas that provide higher quality foraging habitat for California condors. Project Conservation Managers shall be empowered to take action to prevent any such activity under the terms of project conservation easements; covenants, conditions, and restrictions (CC&Rs); and similarly enforceable measures. Compliance with condor protection measures shall be enforced by means of CC&Rs recorded on each of the private parcels within the Tejon Mountain Village Specific Plan and Tejon Mountain Village Special Plan No. 1, Map 256 or by similarly enforceable measures.	Prior to issuance of grading permits (for preparation of educational material) and prior to issuance certificates of residential occupancy (for CC&R's and Conservation Easements)	Kern County Planning Department; Kern County Building Inspection ; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall contract professional environmental specialists to create and disseminate a condor educational curriculum to Project construction and work crews, residents, and guests C. The Kern County Planning Department will verify compliance prior to issuance. D. The applicant shall provide evidence of execution of condor educational curriculum and inclusion of the applicable biological mitigation requirements in the CC&R's to Kern County Building Inspection Department			
#34 **4.4-1**	**MM 4.4-4:** The following shall be implemented to address potential impacts to California condor: a. A condor educational curriculum shall be created and disseminated that will include information concerning prohibited behaviors related to condors such as the pursuit, capture, and harassment of condors and all other potential direct interaction with the species. Compliance with condor	Prior to issuing building and grading permits (for preparation of educational material) and residential certificates of occupancy (for CC&R's)	Kern County Planning Department; Kern County Building Inspection Department; Project Biologist		

	protection measures will be implemented by means of covenants, conditions, and restrictions (CC&Rs) recorded on each of the private parcels within the Tejon Mountain Village Specific and Community Plan or by similarly enforceable measures. b. Tejon Mountain Village, LLC shall provide for routine community maintenance activities that will include regular efforts to eliminate microtrash on and near all roads and back-country areas where human presence has occurred. All trash receptacles will be fitted with animal- and weather-resistant lids. c. Construction workers, Tejon Ranch staff, and residential and commercial occupants and their guests shall be required to cease any behavior that constitutes an attractive nuisance or otherwise presents an unreasonable and avoidable danger to California condors upon direction by the property owner's association manager, in consultation with the Project Biologist and the California Department of Fish and Game. The CC&Rs shall provide examples and authorize the Project Biologist to respond to changing California condor behaviors, human activities, and other conditions with restrictions that are the least intrusive necessary to provide the protection intended. d. Recreational activities, particularly organized hikes or similar events, and filming projects on key ridgelines and on other areas where condors are known or expected to occur, shall be closely regulated to minimize any effects that could disturb feeding or roosting condors. Such regulation can include the dissemination of information regarding condors, and steps to take to avoid and minimize potential disturbances to condors, prior to any organized events that will take place in or adjacent to areas where condors may feed or roost. e. Information, as stipulated in Mitigation Measure 4.4-3, regarding microtrash and appropriate behaviors if condors are encountered, shall be disseminated to guests and/or visitors to all backcountry cabins.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 3.4-4 will be incorporated as a condition of approval on all subsequent discretionary actions and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. The applicant shall contract professional environmental specialists to create and disseminate a condor educational curriculum. E. The applicant shall provide Kern County Building Inspection Department with evidence of inclusion of the condor management measures in the CC&R's. F. The Kern County Planning Department will verify the documentation prior to initiating construction activities.

#35 **4.4-1**	**MM 4.4-5:** The following shall be implemented to address potential impacts to California condor: a. On Grapevine, Middle, Squirrel, Silver, Lolas, and Geghus Ridges, including the upper slopes on either side of these ridges; the east–west ridge above Rising Canyon; or on any other ridge within the Tejon Mountain Village Specific Plan area deemed by the Project Biologist as suitable foraging habitat for condors, the following restrictions shall apply: i. The project shall not place or allow the placement of any antennae outside of existing antenna farms or place new antennae or extend current antennae within an existing antenna farm if any such antenna would be higher than other existing antennae in the existing farm. Currently, the tallest antenna is 100 feet high. ii. The project may construct and maintain, or allow any third party to construct and maintain, phone towers consisting of single telephone/cell phone poles of standard height or other similar structures outside of existing antenna farms. The tops of such phone towers and electricity poles must not extend above any of the above-identified ridges likely to be used by California condors. iii. All surfaces on new antennae and phone towers shall be designed and operated with anti-perching devices. All antenna and phone tower sites shall be kept clean of debris, such as cable, trash, and construction materials. b. Because of the potential for raptors, including the California condor, to collide with wind turbines, no wind farms or wind turbines shall be constructed anywhere on Tejon Mountain Village (and Tejon Ranch Company agrees to expand the ban to all Ranch lands). However, individual wind turbines, which have the primary purpose to serve electrical generation needs on site, may be constructed if, after review and approval by the U.S. Fish and Wildlife Service and the California Department of Fish and Game, such turbines are of a design and in a location that would not pose a threat to California condors.	Prior to approval of a Site Development Plan containing utility towers and prior to approval of residential building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-5 incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. The Kern County Planning Department will verify the note prior to approval. D. Prior to approval of a Site Development Plan, for utility towers the applicant shall provide Kern County Planning Department a biological report illustrating condor foraging areas E. Prior to approval of residential building permits, applicant shall provide the Kern County Building Inspection Department with a copy of the CC&R's showing prohibition on wind turbines			

	c. No new aboveground high-voltage towers, transmission lines, or other aerial obstructions with dimensions that have been associated with condor mortality shall be built within the project area. Relocation of existing towers and lines shall be permitted within 1,000 feet of existing lines as long as they do not occur on the ridgelines, or break the ridgelines, of Grapevine, Middle, Squirrel, Silver, Lolas, or Geghus Ridge. d. Communication towers may be placed on the project site to assure adequate communications are available for Kern County's emergency services and other purposes, provided that such towers are not served by electricity from any new above-ground powerlines except in the immediate vicinity of the tower itself. Such towers will be designed with anti-raptor devices or other measures to discourage use by, and collisions with, raptors and other protected bird species. Such towers may be constructed if, after consultation with the US FWS, such towers are of a design that would not pose a threat to California condors.				
#36 **4.4-1**	**MM 4.4-6:** The project shall participate by providing funding with the Tejon Ranch Company to ensure that the following additional conservation measures will be implemented to benefit the California condor: a. Fund and implement a supplemental feeding program to provide source of clean, lead-free and contaminant-free food for California condors using suitable areas within Tejon Ranch as foraging habitat. The program shall contain the following components: i. Two feeding sites shall be identified with the concurrence of the United States Fish and Wildlife Service to serve as a repository for food carcasses, either within the northernmost or easternmost open space areas within the project site or off site within either the open space areas north of Tejon Mountain Village or within the Condor Study Area.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that either the terms of any permit issued to the applicant by the United States Fish and Wildlife Service related to the condor are being fulfilled or that the condor mitigation measures are not applicable due to the extent or location of grading activity.			

	ii. No structures, other than an electrified fence to ward off predators, shall be built on or near the feeding site. A pulsating, non-lethal, solar powered electric fence charger shall be used to energize electrical fencing on wooden posts. The fenced enclosure configuration and placement shall take into consideration such factors as topography, vegetation, and the amount of space needed for condor access and to prevent the possibility of collision with fence wires. Food carcasses will generally be stillborn calves supplied by a local dairy or ranch or dead cattle or other large animals (e.g., deer, pigs) that have been determined to be free of lead and other contaminants. The frequency of carcass placement will be determined by the Tejon Ranch Company, in cooperation with the United States Fish and Wildlife Service, depending on overall use of the feeding stations by condors. iii. The program shall be implemented by a qualified biologist. The biologist will be trained by United States Fish and Wildlife Service personnel in feeding station protocols prior to the biologist being able to supply the designated feeding site with carcasses. iv. The program shall continue until the 50-year term of the take authorization permit, or other replacement agreements or programs that mitigate impacts of the project with Fish & Wildlife Service, for the Tehachapi Upland Multiple Species Habitat Conservation Plan expires or until United States Fish and Wildlife Service determines that a supplemental feeding program is no longer necessary for the recovery of the species, whichever comes first. b. Fund an additional 25 global positioning system (GPS) satellite tracking transmitter units to allow United States Fish and Wildlife Service to track higher numbers of California condors in the wild to better understand and proactively respond to challenges and opportunities in the recovery of this species. Specifically, $150,000 will be provided prior to the issuance of any grading permits affecting suitable condor	C. Prior to issuance of grading permits, the applicant shall provide Kern County Planning and Building Inspection Departments with proof of phased payment for the condor GPS units D. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning and Building Inspection Departments that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.

	foraging or temporary roosting habitat and then $25,000 will be provided every year afterwards for a total of 10 years. c. Fund a full-time, permanent biologist responsible for implementing mitigation measures set forth in this Draft EIR for the California condor and other protected species and sensitive habitats present within portions of the Tejon Ranch and within the Tejon Mountain Village project area. With respect to condors, the biologist's primary function will be to assist the project in avoiding interactions between humans and California condors and in administering the mitigation measures pertaining to condors set forth in this Draft EIR.				
#37 **4.4-1**	**MM 4.4-7:** The project shall ensure that adequate funding is made available to pay for the United States Fish and Wildlife Service's costs to capture, monitor, provide for veterinary treatment, and/or relocate to a California condor facility, any California condor that United States Fish and Wildlife Service concludes has become habituated to structures or human activity areas within Tejon Mountain Village.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department and County Building Inspection Department that either the terms of any permit issued to the applicant by the United States Fish and Wildlife Service related to the condor are being fulfilled or that the condor mitigation measures are not applicable due to the extent or location of grading activity.			

#38 **4.4-1**	**MM 4.4-8:** Prior to construction activities involving mass grading and construction of backbone infrastructure, a Project Biologist shall be retained by the Master Developer to perform the following for development within each planning area: a. Attend the pre-construction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading to reduce conflict between the timing/location of construction activities with other mitigation requirements (e.g., seasonal surveys for nesting birds) to the maximum extent practicable. b. Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas prior to clearing, grubbing or grading. c. Discuss procedures for minimizing harm to or harassment of wildlife encountered during construction with the contractor and other key construction personnel prior to clearing, grubbing or grading. d. Review/designate the construction area in the field with the contractor in accordance with the final grading plan prior to clearing, grubbing, or grading. e. Site haul roads, access roads, and onsite staging and storage areas within grading areas shall, to the extent practicable, avoid and minimize degradation of vegetation communities adjacent to these areas. If ground-disturbing activities outside grading area limits are necessary, the Project Biologist shall evaluate them to ensure that no special-status or sensitive biological resources are significantly affected. f. Conduct a field review of the staking to be set by the surveyor designating the limits of all construction activity prior to clearing, grubbing, or grading. g. Flag or temporarily fence any construction activity areas within 100 feet of riparian areas, Special Management Areas, and special-status plants located outside the development envelope, prior to clearing, grubbing, or grading; silt fencing shall be installed in areas that are suitable for amphibians and reptiles to prevent their movement into the construction zone.	Prior to issuance of grading permits	Kern County Planning Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

	h. Be present during initial vegetation clearing, grubbing, and grading. i. Relocate special-status species, if practicable, outside of the construction zone and into designated open space if species are observed above the surface during vegetation clearing and grading. j. Maximum construction vehicle speed will be 15 miles per hour for haul roads located outside the development envelope. Contractor education shall be provided to raise driver awareness about vehicle/wildlife conflicts and drivers shall be trained to drive around wildlife or otherwise avoid wildlife collisions, including those involving reptiles and amphibians.				
#39 **4.4-1**	**MM 4.4-9:** Grading plans shall be reviewed by the Project Biologist to verify that plans include necessary design features and construction notes to protect, to the maximum extent practicable, vegetation communities and special-status plant and wildlife species that are located outside the development envelope (and outside the offsite infrastructure areas) and that are adjacent to construction. To address hydrology impacts, the Project Biologist shall verify that grading plans include a Stormwater Pollution Prevention Plan (SWPPP), which will include, at a minimum, the best management practices (BMPs) listed below. The combined implementation of these requirements shall protect adjacent habitats and special-status species during construction to the maximum extent practicable. At a minimum, the following measures and/or restrictions shall be incorporated into the SWPPP, and noted on construction plans where appropriate, to avoid impacts on special-status species during construction. The Project Biologist shall verify the implementation of the following design requirements: a. No planting or seeding of invasive plant species, as identified in Appendix B, Design Guidelines, of the Tejon Mountain Village Specific Plan and Community Plan and Tejon	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. Prior to issuance of grading permits, Kern County Engineering & Survey Department will verify that the project applicant has prepared a SWPPP			

	Mountain Village Special Plan No. 1, Map 256 (Appendix B-1) or the most recent version of the Cal-IPC California Invasive Plant Inventory for the project region (Cal-IPC 2008) will be permitted. b. Location and details will be provided for any dust control fencing along development envelope. c. Construction activity will not be permitted in wetland, water, or riparian areas except as authorized by applicable law and permit(s), including permits and authorizations approved by the United States Army Corps of Engineers, California Department of Fish and Game, United States Fish and Wildlife Service, and Regional Water Quality Control Board. d. Silt settling basins installed during the construction process will be located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes. e. If a stream channel has been altered during the construction and/or maintenance operations pursuant to applicable permit(s), its low-flow channel will be returned as nearly as practical to pre-project topographic conditions and contours. f. Temporary structures and storage of construction materials not designed to withstand high seasonal flows will be moved to areas above the ordinary high water mark before such flows occur. g. Staging/storage areas for construction equipment and materials will be located outside the ordinary high water mark. h. Any equipment or vehicles driven and/or operated within a streambed will be checked and maintained by the operator daily to prevent leaks of oil or other petroleum products that could be deleterious to aquatic life if introduced to the watercourse. i. Stationary equipment, such as motors, pumps, generators, and welders that may be located within a streambed construction zone will be positioned over drip pans. No fuel storage tanks will be allowed in the streambed. j. No debris, bark, slash sawdust, rubbish, cement or concrete or washing thereof, oil, or petroleum products will be stored where it may be washed by rainfall or runoff into watercourses. k. When construction operations are completed, any excess materials or debris will be removed from the work area.	

	l. No equipment maintenance will be performed within or near any streambed where petroleum products or other pollutants from the equipment may enter these areas with stream flow. m. Fully covered trash receptacles that are animal-proof and weather-proof will be installed and used by the operator to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. n. Pets on or adjacent to construction sites will not be permitted by the operator. o. No guns or other weapons will be allowed on construction sites during construction, with the exception of those belonging to security personnel and only for security functions. No hunting will be authorized or permitted during construction. p. Construction activities within 100 feet of the outside edge of the development envelope containing habitat for special-status wildlife will be prohibited between sunset and sunrise, and all construction-related lighting will be turned off during that period, with the exception of lighting for maintenance of construction equipment. Construction equipment can be maintained between sunset and sunrise. Lighting for maintenance within 100 feet of the outside edge of the development envelope containing habitat for special-status wildlife will be downcast luminaries with light patterns directed away from natural areas.	

#40 **4.4-1**	**MM 4.4-10:** Development areas shall have the following dust control measures implemented and maintained to prevent dust impacts on vegetation communities and special-status plant and wildlife species: a. Fugitive fine particulate matter (i.e., dust) management plans will be implemented in compliance with San Joaquin Air Pollution Control District Regulation VIII. b. Where construction activities occur within 100 feet of known special-status plant species occurrences in sensitive plant Special Management Areas or outside the development envelope, chemical dust suppression will not be utilized. c. Where determined appropriate by the Project Biologist, a screening fence (i.e., a 6-foot high chain link fence with green fabric—or similar materials—up to a height of 5 feet), may be installed to protect special-status species occurrences in Special Management Areas or within 100 feet of the development envelope.	Prior to the issuance of grading permits	Kern County Planning Department; Kern County Building Inspection; San Joaquin Valley Air Pollution Control District; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-10 will be included as a note on all grading plans C. Kern County Planning Department shall verify during review of the grading plans D. The applicant will submit documentation of the implementation of measures to the Kern County Building Inspection E. Kern County Building Inspection Department will verify in the field during the construction period.			
#41 **4.4-1**	**MM 4.4-11:** To the maximum extent practicable, trail construction and maintenance shall be restricted to existing ranch roads, which are regularly maintained (at least twice per year). As needed, additional trails may be constructed in project open space, and shall be sited in coordination with the Project Biologist to avoid impacts to special-status plant occurrences. Construction plans for trails shall note the limits of the existing ranch roads and trails.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection to verify prior to issuance of grading permits containing trails			

#42 **4.4-1**	**MM 4.4-12:** Approximately 21,335 acres of the project site shall be set aside for open space within planning areas. An easement or deed restriction that precludes development, as defined in the Tejon Mountain Village Specific Plan and Community Plan and Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1 of the FEIR), will be recorded on project open space. The open space within each planning area will be assured upon recordation of the tentative tract map for each planning area.	Prior to recordation of final tract maps (FTMs)	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify prior to the recordation of a FTM containing open space.			
#43 **4.4-1**	**MM 4.4-13:** Prior to approval of any subdivision map or commercial site development plan the project proponent shall identify areas for open space within each planning area. A Resource Management Plan shall be prepared and submitted concurrent with applications, that specifically identifies required resource management activities and the entities that shall be responsible for managing those activities within the planning area.	Prior to recordation of FTMs	Kern County Planning Department; TMV master Developer/Master Property Owners Association; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify prior to the recordation of a FTM containing open space.			

#44 **4.4-1**	**MM 4.4-14:** An integrated pest management plan for common area landscaping and hotel and commercial areas shall be prepared. Implementation of the integrated pest management plan shall avoid and minimize impacts related to fertilizers, pesticides, and water quality. The integrated pest management plan shall also provide mitigation by providing guidelines for the eradication of non-native, invasive species, including African clawed frog and Argentine ant, and non-native wildlife nuisances. The integrated pest management plan shall discuss the use of pesticides and other methods of passive and active controls and management on site. For common area landscaping, the integrated pest management plan shall be prepared prior to the installation of common area landscaping; for hotel and commercial areas, the integrated pest management plan shall be prepared prior to issuance of building permits. Covenants, conditions, and restrictions that will be recorded to inform future property owners of applicable requirements shall include language that prohibits the use of anticoagulants (used for rodent control) at Tejon Mountain Village. The Property Owners' Association, in coordination with the Project Biologist, shall also supply educational information to residents on compliance with federal and state laws governing the use of pesticide products.	Prior to issuance of certificates of occupancy (for hotel or commercial areas) or landscape improvement plans (for common area landscaping)	Kern County Building Inspection; Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify preparation of the Integrated Pest Management Plans prior to the issuance of building permits (for hotel or commercial areas) or landscape permits (for common area landscaping) C. Kern County Building Inspection will verify restrictions on the use of anitcogulants and pesticides have been included in the CC&R's.			
#45 **4.4-1**	**MM 4.4-15:** In order to limit impacts on water quality, the Master Developer shall comply with all water quality permits required under applicable federal Clean Water Act and state Porter-Cologne Act requirements.	Prior to issuance of grading permits	Kern County Building Inspection Department; Planning Department; TMV Master Developer/Master Property Owners Association; Tejon Castac Water District		

		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will provide Kern County Planning Department with copies of all applicable regulatory water quality permits C. Kern County Building Inspection will verify in the field during the construction period.			
#46 **4.4-1**	**MM 4.4-16:** Prior to installation, plant palettes proposed for use on landscaped slopes, street medians, park sites, and other public landscaped and fuel modification zones within 100 feet of avoided special-status plant occurrences and sensitive vegetation communities shall be reviewed by the Project Biologist to minimize the effects that proposed landscape plants could have on vegetation communities in the open space due to potential naturalization of landscape plants in the open space. Landscape plants will not include invasive plant species, as identified in the Tejon Mountain Village Specific Plan and Community Plan Design Guidelines and Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1 of the FEIR) or the most recent version of the Cal-IPC California Invasive Plant Inventory for the project region (Cal-IPC 2008). Landscape plans will include a plant palette composed of native or non-native, non-invasive species that do not require high irrigation rates. Immediately prior to installation, container plants to be installed within these areas shall be inspected by the Project Biologist for the presence of disease, weeds, and pests, including Argentine ants. Plants with pests, weeds, or diseases will be rejected. Irrigation within 100 feet of these areas will be designed to avoid the spread of water from irrigated land into designated open space.	Prior to approval of landscape improvement plans	Kern County Planning Department; Building Inspection Department; TMV Design and Review Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. The applicant shall submit evidence of landscape plans to the Kern County Planning Department. D. Prior to the approval of common area landscape improvement plans, Kern County Building Inspection Department will verify that that the landscape construction documents include the applicable notes. E. Prior to approval of residential landscape improvement plans, Kern County Building Inspection Department will verify that the CC&R's contain the appropriate restrictions.			

	The covenants, conditions, and restrictions shall also provide that property owners operate and maintain a year-round low-moisture regime within 100 feet of open space and avoid the spread of water from irrigated land into project open space. These requirements will minimize the introduction of exotic plant and animal species, such as Argentine ant, from landscape areas into designated open space.	F. Prior to the approval of common area landscape plans, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#47 **4.4-1**	**MM 4.4-17:** The Property Owners Association shall supply educational information to residents regarding pets, wildlife, and open space areas. The material will discuss the presence of native animals (e.g., coyote, bobcat, and mountain lion), indicate that native animals could prey on pets, and indicate that no actions will be taken against native animals should they prey on pets allowed outdoors by their owners. To protect biological resources that are particularly sensitive to pet disturbance, pets shall be leashed while using the designated trail system and/or in any areas within or adjacent to open space. This restriction shall be noted in educational information provided to residents by the Property Owners Association and on trail system and open space signage maintained by the project Conservation Managers. In designated areas where biological resources are not sensitive to pet disturbance, which will be determined by the project Conservation Managers, pets can be leash-free under sufficient voice control to restrict the pets to existing trails. Control of stray and feral cats and dogs shall be conducted in open space areas on an as-needed basis by the project Conservation Managers as described in Appendix C of the Tejon Mountain Village Specific and Community Plan. Stray and feral cats and dogs may be trapped and deposited with the local Society for the Prevention of Cruelty to Animals, the Kern County Department of Animal Control, or Shelter on the Hill Humane Society.	Prior to issuance of certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Associaiton		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval C. Prior to the issuance of residential certificates of occupancy, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Building Inspection Department will verify that educational materials are available for the Property Owner's Association to distribute to residents regarding pets, wildlife, and open space areas			

#48 **4.4-1**	**MM 4.4-18:** As identified in the Tejon Mountain Village Framework Resource Management Plan (Appendix C of the Tejon Mountain Village Specific and Community Plan), the project Conservation Managers, in consultation with CDFG, and with the Property Owners Association Manager acting as the lead manager, shall develop and implement a conservation education and citizen awareness program for the open space areas informing the public of the special-status biological resources present within Tejon Mountain Village and providing information on common threats posed by the presence of people and pets to those resources. This shall include the following: a. The project Conservation Managers shall install trailhead and trail signage indicating that the project open space is a biological conservation area and requiring that people and their animals stay on existing trails at all times. Signage shall also be posted near Castac Lake stating that feeding wildlife is prohibited. b. The project Conservation Managers shall provide periodic maintenance patrols to remove litter and monitor trail expansion and fire hazards within the project open space. c. The education program shall discuss the negative impacts of unauthorized capturing (i.e., poaching) of wildlife. The education program regarding unauthorized wildlife capture shall highlight the negative impacts of collecting salamanders.	Prior to issuance of residential certificates of occupancy (for educational materials) and approval of grading plans for trail systems (for signage)	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of residential certificates of occupancy, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. Kern County Engineering & Survey Department will verify that educational materials are available for the Property Owner's Association to distribute to residents regarding: the importance conservation of open space areas; the negative impacts of unauthorized capturing (i.e., poaching) of wildlife; the negative impacts of collecting salamanders and the requirements for the Property Owner's Association to conduct periodic maintenance patrols to remove litter and monitor trail expansion and fire hazards within the project open space..			

#49 **4.4-1**	**MM 4.4-19:** Open space uses are restricted to grazing, managed hunting, environmental education, adaptive open space management, recreation (e.g., hiking, biking, equestrian uses), emergency response and public safety, and infrastructure installation and other uses as described in the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1). All recreational and habitat management activities shall be directed or monitored by the project Conservation Managers. Grazing will continue to be managed by Tejon Ranch Company in coordination with the project Conservation Managers. Management could include fencing to exclude cattle or restriction of cattle in riparian areas.	Prior to approval of FTMs	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify that that the FTMs include easements restricting the uses of open space to grazing, managed hunting, environmental education, adaptive open space management, recreation, emergency response and public safety, and infrastructure installation and other uses as described in the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1).			
#50 **4.4-1**	**Mitigation Measure 4.4-20:** The operator of the golf course shall prepare a golf course maintenance plan, which will include procedures to control impacts to stormwater quality and groundwater quality as a result of golf course maintenance practices, including irrigation and use of fertilizers and pesticides. The golf course maintenance plan will address potential conflicts with native burrowing animals. The golf course maintenance plan shall be prepared in accordance with federal and state laws governing the use of pesticides and fertilizers and shall be coordinated with the Integrated Pest Management plan (Mitigation Measure 4.4-14). The use of rodenticides will be avoided to the maximum extent practicable. The golf course maintenance plan shall be finalized prior to issuance of a certificate of occupancy for the golf course maintenance building.	Prior to issuance of a certificate of occupancy for the golf course maintenance buildings	Kern County Planning Department; Kern County Building Inspection Department; Kern County Engineering and Survey Services; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection Department will verify that the golf course management plans will include procedures to control impacts to storm water quality and groundwater quality and be prepared in accordance with federal and state laws.			

#51 **4.4-1**	**MM 4.4-21:** To minimize the potential exposure of the development areas and open space to fire hazards, the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1 of the FEIR) is subject to the requirements of the Kern County Fire Department, which provides fire protection for the area. A project-wide fire protection plan (Appendix D of the Tejon Mountain Village Specific and Community Plan has been submitted to the County as part of the project Specific Plan. It includes a fuel modification plan that depicts fuel modification zones in and adjacent to the development envelope. The fuel modification zones shall be consistent with the County requirements. Within the zones, tree pruning, removal of dead plant material, and weed and grass cutting shall take place as required by the fire protection plan. Fuel modification activities shall be managed by the Property Owners Association Manager. Ongoing grazing will be operated by Tejon Ranch Company with oversight from the project Conservation Managers.	Prior to approval of landscape improvement plans for fuel modification zones	Kern County Planning Department; Kern County Fire Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection Department will verify that the fuel modification improvement plans are consistent with the requirements of the Fire Protection Plan.			

#52 **4.4-1**	**MM 4.4-22:** The Master Developer shall have pre-construction surveys conducted by the Project Biologist no earlier than 7 days prior to ground-disturbing activities involving mass grading and the installation of backbone infrastructure, including clearing, grading, or grubbing, that occur during the nesting/breeding season of special-status bird species potentially nesting on the site. The Project Biologist will be qualified to conduct all avian surveys. For nesting riparian birds, the Project Biologist will be qualified and permitted to conduct surveys for willow flycatcher and least Bell's vireo. The pre-construction surveys shall be conducted between March and September or as determined by the Project Biologist, depending on the location of the ground-disturbing activities. The purpose of the surveys will be to determine if active nests of special-status birds are present in the disturbance zone or within 500 feet of the disturbance zone boundary. If active nests are found, ground-disturbing activities within 300 feet of the nest (or 500 feet for most raptors and tricolored blackbird colonies) shall be postponed or halted, at the discretion of the Project Biologist, until the nest is vacated and juveniles have fledged, as determined by the Project Biologist. If ground-disturbing activities are delayed, then additional pre-disturbance surveys shall be conducted such that no more than 7 days elapse between the survey and ground-disturbing activities. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barriers and construction personnel shall be instructed on the sensitivity of nest areas per the requirements stated in Mitigation Measure 4.4-8. The Project Biologist shall serve as a construction monitor during those periods when construction activities are to occur near active nest areas to avoid inadvertent impacts to these nests. The Project Biologist may adjust the 300-foot or 500-foot setback at his or her discretion depending on the species and the location of the nest (e.g., if the nest is well protected on a rocky outcrop or buffered by dense vegetation).	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. Kern County Planning Department will verify documentation prior to issuance of grading permits.			

#53 **4.4-1**	**MM 4.4-23:** Special Management Areas requiring either avoidance or performance measures shall be established to avoid or minimize impacts on special-status plants, animals, and vegetation communities. Special Management Area descriptions and corresponding mitigation requirements are included in Appendix E-2, and listed below: a. Special Management Area 1 is an avoidance area established for the protection of the aromatic canyon gooseberry. b. Special Management Area 2 is an avoidance area established for the protection of the gypsum loving-larkspur. c. Special Management Area 5 is an avoidance area~~s~~ established for the protection of Hoover's eriastrum. d. Special Management Areas 3, 4, and 6 are avoidance areas established for the protection of Kusche's sandwort. e. Special Management Area 7 is an avoidance area established for the protection of the small-flowered monkeyflower and aromatic canyon gooseberry. f. Special Management Area 8 is a performance standard area established for the protection of the gypsum loving-larkspur. g. Special Management Area 9 is an avoidance area established for the protection of the prairie falcon. h. Special Management Area 10 is a performance standard area established for the protection of riparian, wetland and drainage areas and the special-status plants and animals in these areas. i. Special Management Areas 11 through 121 are avoidance areas established for the protection of riparian, wetland, and drainage areas and the special-status plants and animals in these areas.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

#54 **4.4-1**	**MM 4.4-24:** Impacts on breeding burrowing owls shall be avoided and minimized during construction activities through the following measures: a. Pre-construction surveys for primary and secondary breeding/foraging habitat for burrowing owls shall be conducted 30 days prior to scheduled construction activity involving mass grading and the installation of backbone infrastructure to determine whether burrowing owls are present on site and, if present, their breeding status (breeding season is March through August). Pre-construction surveys shall be conducted between March and August. b. If non-nesting burrowing owls are observed during these surveys, construction work shall proceed after owls are evacuated from the site using a California Department of Fish and Game-approved burrow closure procedure and after alternative burrow sites have been provided in project open space in accordance with the California Department of Fish and Game "Staff Report on Burrowing Owl Mitigation" (DFG 1995). Results of surveys and relocation efforts shall be submitted to the California Department of Fish and Game. c. If nesting burrowing owls are observed during these surveys, construction work within 300 feet of active nest burrows shall be delayed until fledglings have left or are independent of the nest, as determined by the Project Biologist. Nests that become active within 300 feet of construction activities after initiation of construction are not subject to the 300-foot setback. The Project Biologist may reduce the 300-foot setback based on the type and intensity of construction activity and other factors. Nests that become active within designated construction zones after initiation of construction shall be avoided (i.e., active nests would not be directly disturbed), but no setback will be provided. Results of surveys and avoidance of nesting burrowing owls shall be submitted to the California Department of Fish and Game.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

#55 **4.4-1**	**MM 4.4-25:** Impacts to American badger individuals and wintering and natal dens shall be avoided and minimized during construction activities through the following measures: a. During the winter (between November 1 and March 31, when daily temperatures do not exceed 45°F), when American badgers may use winter dens to enter torpor, pre-construction surveys shall be conducted no earlier than 14 days prior to ground-breaking construction by the Project Biologist to determine if American badger winter dens are present within the limits of disturbance or within 100 feet of the disturbance zone boundary. b. If an American badger winter den is occupied within a construction area for construction activities involving mass grading and the installation of backbone infrastructure, then the den location shall be clearly marked with fencing or flagging to avoid inadvertent impacts on the den, and one of the following shall occur: i. Construction activities will be postponed or halted until it is determined by the Project Biologist that badgers are not using the den, if practicable. ii. If it is not practicable to avoid the wintering den during construction activities, an attempt will be made to trap or flush the individual and relocate it to designated open space. After a trapping or flushing effort is completed, construction may proceed and disturb the occupied winter den even if it remains. If trapping is required, trapping will be limited to November 16 through last day of February in accordance with Section 461, Title 14 of the CCR. iii. During the spring and summer, when American badgers may use dens for birthing young (generally April through August), pre-construction surveys shall be conducted by the Project Biologist no earlier than 14 days prior to construction activities involving mass grading and the installation of backbone infrastructure, to determine if American badger natal dens are present within the construction area or within 100 feet of the construction area.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

	If American badger dens are occupied during the breeding season within these areas, construction activities shall be postponed or halted in these areas until it is determined by the Project Biologist that the young are no longer dependent on the natal den. If an active natal den is identified within 100 feet of these areas, to avoid inadvertent impacts during construction, the den location shall be clearly marked with fencing or flagging in a manner that will not inhibit normal behavioral activities (e.g., foraging) by the mother.				
#56 **4.4-1**	**MM 4.4-26:** In accordance with Appendix B, Design Guidelines, of the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256, (Appendix B-1), exterior lighting shall be limited in order to preserve the nighttime ambience throughout the Tejon Mountain Village community. These limitations on lighting also mitigate the short- and long-term indirect impacts that lighting can have on species. All lighting along the perimeter of the open space areas exterior to the development envelope shall be downcast with light patterns directed away from natural areas and shall be consistent with the dark sky guidelines.	Prior to issuance of external electrical lighting permits	Kern County Planning Department; Project TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit to the Kern County Building Inspection Department a lighting plan. C. Kern County Building Inspection Department will verify the lighting plan with the Kern County Planning Department. D. Kern County Building Inspection Department will verify that all exterior lighting is downcast and directed away from natural areas. E. The Building Inspector will verify continued compliance during regular inspections.			

#57 **4.4-1**	**MM 4.4-27:** Prior to implementing active fuel modification measures during the breeding season of native birds in the region of the project site (typically March through August in the project region, or as determined by the Project Biologist during construction of master improvement and the Property Owners Association Manager thereafter), surveys shall be conducted to determine the presence of nesting birds within the fuel modification zones. Any active breeding nests shall be mapped. The fuel modification zones described in the fire protection plan (Mitigation Measure 4.4-21) shall be modified to create a 300-foot buffer (500 feet for most raptors and tricolored blackbird colonies) around these nests and avoid any clearing or grading within these buffer areas during the breeding season.	Prior to approval of landscape improvement plans (for fuel modification)	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection Department will verify that the construction specifications for landscape plans in fuel modification zones include requirements for pre-construction nesting bird surveys. C. Prior to the issuance of landscape improvement plans for fuel modification, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#58 **4.4-1**	**MM 4.4-28:** Impacts on two-striped garter snake individuals will be avoided and minimized during clearing, grading, and grubbing activities. The contractor shall be provided two alternative options to avoid and minimize impacts to two-striped garter snake individuals: a. The Project Biologist shall perform pre-construction surveys 30 days prior to clearing, grading, and grubbing by walking through suitable habitat to clear the area of garter snakes and relocate them to suitable habitat in designated open space; OR b. The contractor shall erect a silt fence or other blocking device(s) around the work zone in lieu of a daily monitor. After erection of the fence or other device(s), a qualified Project Biologist shall perform an initial clearance survey, followed by periodic checks to verify that the fencing/device(s) are intact and functioning. Once an area has been cleared completely, additional daily monitoring and fencing/device(s) will not be required.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#59 **4.4-1**	**MM 4.4-29:** Under the direction of the project Conservation Managers, to discourage human intrusion, appropriate signage and some permanent fencing may be installed and maintained along limited segments of highly used pedestrian trails or pedestrian trailheads that are located within 100 feet of documented occurrences of special-status plants and wildlife. Alternatively, the project Conservation Managers can elect to close a trail in lieu of permanent fencing. Fencing locations and designs may not interfere with special-status wildlife movement corridors.	Prior to the issuance of grading permits	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			
#60 **4.4-1**	**MM 4.4-30:** No earlier than 30 days prior to the commencement of construction activities involving mass grading and the installation of backbone infrastructure, a pre-construction survey shall be conducted by the Project Biologist to determine if active maternity roosts of bats are present in the project disturbance zone or within 300 feet of the project disturbance zone boundary. If an active maternity roost is identified in these areas, the maternity roost will not be directly disturbed, and some construction activities within 300 feet of the maternity roost may be postponed or halted until the maternity roost is vacated and juveniles have fledged, as determined by the Project Biologist. The breeding season for native bat species in California is approximately April 1 through August 31.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-30 will be included as a note on all grading plans. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

#61 **4.4-1**	**MM 4.4-31:** A Grazing Management Plan shall be developed to manage future grazing activities to avoid significant impacts to special-status plant and wildlife and sensitive vegetation communities (including mitigation and restoration areas). The Grazing Management Plan shall provide for monitoring of grazing activities, and shall include seasonal rotations, temporary exclusion area fencing that does not interfere with wildlife movement, and other management practices to allow avoided and restored biological resource areas to be preserved or to enhance existing functions and values.	Prior to issuance of landscape improvement plans for fuel modification zones	Kern County Planning Department: Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit a Grazing Management Plan to the Kern County Planning Department. C. Prior to the issuance of landscape improvement plans for fuel modification zones, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#62 **4.4-1**	**MM 4.4-32:** When work in a flowing stream is unavoidable, a plan shall be prepared to temporarily divert the stream flow around the work area with a barrier, temporary culvert, new channel, or other means. Any such temporary diversion activity shall require, and be subject to, applicable permit requirements. a. The plan shall include at minimum the following elements: i. The location of the upstream and downstream diversion points. ii. Provisions for relocation of any special-status species found in the area and/or methods to preserve them until work are completed. iii. When work is completed, return of special-status species to the stream in a manner and place to assure their survival. Individuals that are collected may also be relocated to suitable habitat near the work area. (See Appendix D of the "Tejon Mountain Village Biological Resources Report" [Appendix E-1]).	Prior to the issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department: Kern County Engineering and Survey Services; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. If necessary, applicant will submit a plan for temporary diversion to the Kern County Building Inspection Department. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

	iv. The Project Biologist shall be present when any stream diversion takes place, and shall patrol the areas within, upstream, and downstream of the work area. The plan under Mitigation Measure 4.4-9 shall be followed unless modified in the field at the direction of California Department of Fish and Game or United States Fish and Wildlife Service. b. Construction of the diversion shall be as follows: i. Temporary diversion channels shall be constructed using the least damaging method practicable, and the removal of wetland and riparian vegetation to construct the channel shall be avoided to the greatest extent practicable. ii. The temporary channel shall be connected to a natural channel downstream of the construction site prior to diverting the stream. iii. Construction of the barrier and/or the new channel will normally begin in the downstream area and continue in an upstream direction, and the flow will be diverted only when construction of the diversion is completed. iv. The integrity of the channel and diversion shall be maintained throughout the construction period. Channel bank or barrier construction will be adequate to prevent seepage into or from the work area. Diversion berms shall be constructed of onsite alluvium of low silt content, inflatable dams, sand bags, or other approved materials. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock, riprap, or other protective material. v. The enclosure and the supportive material will be removed when the work is completed and removal will normally proceed from downstream in an upstream direction. vi. The stream channel alignment shall be restored after construction.	

	vii. Equipment shall not be operated in areas of ponded or flowing water unless there are no practicable alternative methods to accomplish the construction work, and only after prior approval by the United States Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Game. viii. Installation of bridges, culverts, or other structures shall not impair movement of aquatic species. Bottoms of temporary culverts shall be placed at or below channel grade. Bottoms of permanent culverts shall be placed below channel grade. ix. Water containing mud, silt, or other pollutants from construction activities shall not be allowed to enter a flowing stream or be placed in locations that may be subject to normal storm flows during periods when storm flows can reasonably be expected to occur.				
#63 **4.4-1**	**MM 4.4-33:** Pre-construction surveys and avoidance measures shall be implemented for Tehachapi slender salamander subject to applicable permitting requirements. For construction activities involving mass grading and the installation of backbone infrastructure occurring in or directly adjacent to occupied or suitable habitat for the Tehachapi slender salamander, pre-construction surveys shall be conducted by the Project Biologist prior to disturbance to determine if Tehachapi slender salamander individuals are present in the disturbance zone. If visual searches are used for pre-construction surveys, the Project Biologist shall conduct surveys no earlier than 72 hours prior to disturbance, and if pitfall trapping is used, the Project Biologist shall conduct trapping no earlier than 5 days prior to disturbance. If Tehachapi slender salamanders are located, individuals within the disturbance zone shall be captured and relocated to the closest suitable habitat area containing talus, as and to the extent required by the United States Fish and Wildlife Service under the Multiple Species Habitat Conservation Plan or by the California Department of Fish and Game in a permit.	Prior to the issuance of grading permits	Building Inspection; Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

	When occupied or modeled suitable habitat for Tehachapi slender salamander is directly impacted by construction activities involving mass grading and the installation of backbone infrastructure, a habitat restoration plan shall be developed for the Tehachapi slender salamander that specifies, at a minimum, the following: 1) the location of creation, enhancement, or restoration planting sites; 2) a complete description of the hardscape (e.g., talus, rocks, and logs) to be installed and where it will be deposited, along with desired leaf and litter cover; 3) a description of how the existing typical hydrologic regime will support Tehachapi slender salamander habitat; 4) the quantity and species of plants to be planted; 5) planting procedures, including the use of soil preparation and irrigation; 6) methods for the removal of non-native plants; 7) a schedule and action plan to maintain and monitor the creation/enhancement/ restoration area; 8) a list of criteria (e.g., growth, percent plant cover, plant diversity, debris, and hardscape) and performance standards by which to measure success of the creation/enhancement/restoration; and 9) contingency measures in the event that creation/enhancement/restoration efforts are not successful. Performance standards shall be defined by a site-specific pre-construction study of known locations occupied by Tehachapi slender salamander, including evaluation of specific cover; distance to water; water inundation levels; percent canopy cover; percent shrub and grass cover; presence of talus, boulder, log, or other refugia; and other factors. The restoration plan performance standard under this mitigation measure is to create, restore, or enhance areas so that Tehachapi slender salamanders can naturally colonize these areas or Tehachapi slender salamanders within the disturbance zone can be successfully relocated to these areas. The plan shall be prepared by the Project Biologist prior to the issuance of a grading permit for construction activities involving mass grading and the installation of backbone infrastructure that would have an impact on occupied or suitable habitat for the Tehachapi slender salamander.	

	As with other special-status species, pre-construction survey methods, avoidance measures, and final mitigation requirements for this species shall be established by the United States Fish and Wildlife Service and California Fish and Game. Permit applications submitted to the California Department of Fish and Game, shall include, at minimum, environmental impact report mitigation measures.				
#64 **4.4-1**	**MM 4.4-34:** Pre-construction surveys and avoidance measures shall be implemented for yellow-blotched salamander, coast horned lizard, coast patch-nosed snake, and silvery legless lizard. For construction activities involving mass grading and the installation of backbone infrastructure occurring in or directly adjacent to occupied or suitable habitat for yellow-blotched salamander, coast horned lizard, coast patch-nosed snake, and silvery legless lizard, pre-construction surveys shall be conducted by the Project Biologist to determine if these special-status species are present. If visual searches or raking (in the case of silvery legless lizard) are used for pre-construction surveys, the Project Biologist shall conduct surveys no earlier than 72 hours prior to disturbance, and if pitfall trapping is used, the Project Biologist shall conduct trapping no earlier than 5 days prior to disturbance. If these species are located in the disturbance zone, then individuals shall be captured and relocated to suitable habitat for the species within the open space.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

#65 **4.4-1**	**MM 4.4-35:** European starling monitoring, removal, and management methods shall be implemented if determined necessary by the project Conservation Managers as identified in the Tejon Mountain Village Framework Resource Management Plan (Appendix C of Appendix B-1). The plan shall be implemented if there is an abundance of European starling within 500 feet of suitable habitat for purple martin and Lewis's woodpecker. The abundance of the starling will be based upon monitoring efforts conducted by the project Conservation Managers during the breeding season of the starling, or the presence of large winter flock sizes. Prior to implementation, the project Conservation Managers shall develop a management plan that shall specify, at a minimum, the methods for capturing European starlings and the process for euthanizing captured European starlings (e.g., humane euthanasia according to American Veterinary Medical Association [2007] Guidelines).	Prior to issuance of grading permits	Kern County Planning Department: Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			
#66 **4.4-1**	**MM 4.4-36:** The covenants, conditions, and restrictions shall provide that property owners keep trash in covered containers that are fitted with animal- and weather-proof lids in order to prevent artificially increasing the populations of non-native rats, opossums, raccoons, skunks, and other mesopredators; discourage special-status wildlife species, such as California condor, from foraging on trash; and discourage other wildlife species, such as bears, from foraging on trash; reduce negative interactions between wildlife and humans and pets; and reduce vehicle collisions with wildlife. As identified in the Tejon Mountain Village Framework Resource	Prior to issuance of certificates of residential occupancy	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; TMV Master Developer/Master Property Owners Association; Project Biologist		

	Management Plan (Appendix C of Appendix B-1), the Property Owners Association Manager, in coordination with the project Conservation Managers, shall supply educational information to residents on the benefits of trash receptacles fitted with animal- and weather-proof lids. The Property Owners Association Manager shall also periodically monitor receptacles for compliance.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify the note prior to approval. C. Kern County Building Inspection will verify that the CC&R's require property owners to keep trash in covered containers that are fitted with animal- and weather-proof lids. D. Prior to the issuance of certificates of residential occupancy, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#67 **4.4-1**	**MM 4.4-37:** The covenants, conditions, and restrictions shall provide that property owners or managers with horses restrict the animals' diet to an approved list of food sources that prohibit feed containing seeds of non-native plant species in order to prevent the spread and establishment of non-native plant species into open space. The Property Owners Association Manager shall supply educational information to residents on the approved list of food sources and the reason for restricting the diets of horses on Tejon Mountain Village.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Building Inspection Department will verify that the CC&R's provide that property owners or managers with horses restrict the animals' diet to an approved list of food sources that prohibit certain feed.			

#68 **4.4-1**	**MM 4.4-38:** Within occupied or suitable habitat for Tehachapi slender salamander, culverts shall be placed under road connections and the roads shall be designed, in coordination with the Project Biologist and in consultation with CDFG, to prevent this species from entering the onsite roads from areas where this species occurs on Tejon Mountain Village.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-38 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. The Kern County Planning Department will verify the note prior to approval. D. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. E. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			
#69 **4.4-1**	**MM 4.4-39:** Surface areas disturbed by subsurface utility installations shall be restored to pre-construction habitat types to the maximum extent feasible, as determined by the Project Biologist. Utilities constructed within or adjacent to roadways and other previously disturbed right-of-way areas shall be resurfaced consistent with these ongoing right-of-way uses.	Prior to the approval of street improvement plans	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the approval of street improvement plans, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

#70 **4.4-1**	**MM 4.4-40:** Prior to the initial construction within 1 mile of the edge of Castac Lake, the Project Biologist shall conduct focused surveys for wintering (October through March) bald eagles within the proposed project phase and, if present, their preferred diurnal perches and roosting areas will mapped. If necessary (i.e., if diurnal perches and roosting areas for bald eagle are mapped on Tejon Mountain Village), the following standards shall apply using the data collected during the survey: a. Management standards developed by the project Conservation Managers, in initial coordination with the Project Biologist, will be applied to preferred diurnal tree perches or high-quality roost trees (those trees with greater than 12 inches diameter at breast height) for bald eagle that are within 100 feet of the shoreline of Castac Lake to the maximum extent practicable. (Proximity to food is likely the most important characteristic for a preferred diurnal perch site [Steenhof 1978].) Management standards may include, but will not be limited to, the following:	Prior to issuance of grading permits and certificates of occupancy	Kern County Building Inspection Department; Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. Prior to the issuance of certificates of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. B. Prior to the issuance of certificates of residential occupancy, the applicant shall provide evidence to Kern County Planning Department that: (1) only guided hunts are permitted in the Project, (2) that the use of lead ammunition is banned on hunts, and (3) that the CC&R's prohibit the feeding of wildlife and include a requirement that educational signage on bald eagles be installed adjacent to Castac Lake			

	i. Diurnal perch areas will be selectively thinned to stimulate the growth of existing trees and enhance perching habitat by creating openness in these areas. ii. New large tree species will be planted within 100 feet of the shoreline of Castac Lake in areas preserved for bald eagle at a 1:1 ratio to replace large trees impacted within 100 feet of the shoreline of Castac Lake. iii. A small percentage of trees within 100 feet of the shoreline of Castac Lake in areas preserved for bald eagle may be girdled in order to create snags for perching. Because girdling will result in the death of the tree, the percentage of trees girdled will be determined by the project Conservation Managers and only performed if deemed necessary. iv. Existing snags and large trees within 100 feet of the edge of Castac Lake will be avoided during construction to the maximum extent practicable. v. Identified preferred roosting areas that are well protected from wind (e.g., in a canyon or blocked by trees) will be preserved, including an adequate setback from preserved roosting areas. The setback will be determined by the Project Biologist using data collected during the focused surveys for wintering bald eagles, which will be conducted prior to the approval of the grading plan within 1 mile of the edge of Castac Lake. Between October 15 and March 15, uses within the roost areas and the setback will be limited to those approved by the project Conservation Managers, in conjunction with the Project Biologist, during construction. Activities such as hunting (from November 1 through March 30) and other recreational uses deemed intrusive to roosting bald eagles will be excluded. vi. Subject to Kern County Fire Department approval, removal of preferred diurnal perches and high-quality roost trees from fuel modification zones within 1 mile of Castac Lake, as identified by the Project Biologist, will be prohibited.	

	b. Intentional feeding of bald eagles (i.e., leaving or depositing fish or other food in areas such that it could be consumed by eagles) shall be prohibited on Tejon Mountain Village and the covenants, conditions, and restrictions shall provide that the feeding of this species and other wildlife species on Tejon Mountain Village is prohibited. The project Conservation Manager shall install signage adjacent to Castac Lake indicating that leaving food available for bald eagles is prohibited. c. Interpretive and educational signage shall be installed on the project site near Castac Lake, in coordination with the project Conservation Managers, informing the public about bald eagles, their habitat requirements, and their sensitivity to human disturbance during the wintering season for the species (late October through March). d. Per Mitigation Measure 4.4-1, hunting within Tejon Mountain Village shall be limited to guided hunts under the direction of a trained hunting guide for purposes of wildlife and non-native, invasive species population management. All participants in any such onsite population management efforts will be educated in the identification and behavior of the bald eagle and supervised by the project Conservation Managers to avoid any accidental encounter with this species. Pursuant to the lead ammunition ban that was implemented over the entire Tejon Ranch beginning January 1, 2008, only non-lead ammunition will be used at all times within the project site during hunts of any kind.	

#71 **4.4-1**	**MM 4.4-41:** Surveys for active golden eagle nests shall be conducted by the Project Biologist during the breeding season (January through August) prior to initiation of grading for the backbone infrastructure for each phase of development in primary breeding and breeding/foraging habitat. If active golden eagle nest sites are observed prior to the initiation of grading for the backbone infrastructure of each phase of development, a nest-specific viewshed analysis shall be prepared using the following standards in order to conserve the nest. a. No development will occur within the viewshed of an active golden eagle nest that is also within 0.5 mile of the nest. b. Between 0.25 and 1.0 mile from the active golden eagle nest and outside of the nest viewshed, and between 0.5 and 1.0 mile of the golden eagle nest and within the nest viewshed, development will be restricted to low-density development (e.g., mountain residential) and homes must be sited to minimize visibility to golden eagle nests. c. Between 0.5 and 1.0 mile from the active golden eagle nest, siting and design criteria will be established to avoid/minimize loss of foraging habitat, including preserving larger, contiguous blocks of foraging habitat through clustering development (i.e., higher density development). d. No development, new trails, or recreational activities will occur within 0.25 mile of an active golden eagle nest, within or outside of the viewshed. e. Trail use will be restricted within 0.25 to 0.5 mile of the viewshed of an active golden eagle nest during the nesting season (February 1 through June 1). Trail use may be allowed during the nesting season if the Project Biologist or project Conservation Manager has determined that the nest has become inactive and trail use would not affect a nesting golden eagle.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. MM 4.4-41 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#72 **4.4-1**	**MM 4.4-42:** The approximately 0.7-acre rock outcrop in Rising Canyon where a prairie falcon nests will be physically avoided, along with a 400-foot horizontal setback from the rock outcrop. This area has been placed into Special Management Area 9, comprising 18.8 acres. Within this 18.8-acre Special Management Area for prairie falcon, recreational activities, use of trails, and other activities determined by the project Conservation Managers shall be prohibited during the prairie falcon breeding season (March through August). Rising Canyon Road shall be constructed at the edge of this 18.8-acre Special Management Area (the proposed road is approximately 400 feet from the rock outcrop). In addition, active fuel modification shall be restricted within Special Management Area 9 during the prairie falcon breeding season (March through August).	Prior to issuance of street improvement plans in Rising Canyon	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-42 will be included as a note in the street improvement plans in Rising Canyon. C. Prior to the issuance of street improvement plans in Rising Canyon, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#73 **4.4-1**	**MM 4.4-43:** At the discretion of the Project Biologist, pre-construction surveys shall be conducted for ringtail individuals in suitable habitat areas where mass grading or the installation of backbone infrastructure would occur and within 300 feet of this disturbance area. If the ringtail is detected in these areas during the breeding/rearing period (February 1 through August 31), construction activities will be avoided during the breeding/rearing period or until the Project Biologist has determined that 1) the ringtail no longer occupy the project disturbance zone (i.e., area of mass grading/installation of backbone infrastructure) or areas within 300 feet of the project disturbance zone, and/or 2) construction activities would not adversely affect the successful rearing of young. The Project Biologist may reduce the 300-foot setback at his or her discretion depending on the site conditions. If the ringtail is detected in the project disturbance zone (i.e., mass grading/installation of backbone infrastructure) or areas within 300 feet of the project disturbance zone during the non-breeding/rearing period (September 1 through January 31), the Project Biologist (in consultation/coordination with California Department of Fish and Game) shall flush or exclude the ringtail located within the project disturbance zone and/or within 300 feet of the disturbance zone.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologost		
		Steps to Compliance: A. MM 4.4-43 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable..			
#74 **4.4-1**	**MM 4.4-44:** Pre-construction surveys (including aboveground visual searches and pitfall trapping) shall be conducted for western spadefoot toad in suitable habitat, and shall include relocation of any trapped individuals at the discretion of the Project Biologist. If western spadefoot toad is detected (including egg masses, larvae), construction activities shall be avoided until larvae have metamorphosed. A 300-foot setback from the occupied area shall be established if work must continue in proximity to the site with egg masses and/or larvae. The Project Biologist may reduce the 300-foot setback at his or her discretion depending on the site conditions. Construction activities in modeled suitable habitat for western spadefoot toad shall be monitored, and shall include exclusion fencing, if appropriate, to prevent western spadefoot toads from entering construction zones.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologoist		
		Steps to Compliance: A. MM 4.4-44 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#75 **4.4-1**	**MM 4.4-45:** Pre-construction surveys in breeding habitat for American peregrine falcon shall be conducted during the breeding season (March through August) to determine if nesting American peregrine falcons are present. If active American peregrine falcon nests are detected during pre-construction surveys, a 0.25-mile protection zone shall be established around each active nest and construction activities involving mass grading and construction of backbone infrastructure within the 0.25-mile protection zone shall be prohibited as long as the nest is active. The 0.25-mile protection zone may be reduced at the discretion of the Project Biologist.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. MM 4.4-45 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#76 **4.4-1**	**MM 4.4-46:** If a golden eagle nest becomes established within the viewshed of an area already approved for construction and within an area where no active nests have been previously identified, construction within the viewshed that could adversely affect the success of the nest will not occur until all young have fledged. After it has been determined by the Project Biologist that the fledged young are no longer dependent upon the nest for survival, the proposed construction can proceed as planned.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologoist		
		Steps to Compliance: A. MM 4.4-46 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#77 **4.4-2**	**MM 4.4-47:** A sitewide conceptual mitigation plan has been developed that identifies mitigation for impacts to unvegetated streambeds and riparian areas subject to California Department of Fish and Game jurisdiction under Section 1602 of the California Fish and Game Code and wetlands and waters under the jurisdiction of the United States Army Corps of Engineers pursuant to Section 404 of the Clean Water Act. Final mitigation requirements for the project will be established by these agencies, and as applicable the United States Fish and Wildlife Service and Regional Water Quality Control Board. The conceptual mitigation plan is included in Appendix H of the "Tejon Mountain Village Biological Resources Technical Report" (Appendix E-1 of this Draft EIR). The project shall implement the following measures to mitigate for onsite impacts to 24.7 acres of unvegetated streambeds and riparian habitats regulated under Section 1602 of the Fish and Game Code, of which 2.9 acres are off site. Approximately 7.2 acres of the project's onsite riparian area impacts are within the fuel modification zone and impacts shall be limited to vegetation thinning that will not result in any fill of these resources. Approximately 2.2 acres of the 2.9 acres of offsite impacts and all onsite impacts related to the installation of underground utilities will be temporary in nature and subject to restoration following infrastructure installation. Temporarily impacted infrastructure improvement areas shall be mitigated by the creation of riparian or	Prior to issuance of grading permits	Kern County Planning Department; California Department of Fish and Game, United States Army Corps of Engineers; Project Biologist		
		Steps to Compliance: A. Impacts to unvegetated streambeds and riparian areas subject to California Department of Fish and Game jurisdiction under Section 1602 of the California Fish and Game Code, and wetland and water resources under the jurisdiction of the United States Army Corps of Engineers pursuant to Section 404 of the Clean Water Act as described in Impact 4.4-3 and are required to follow specific requirements and measures established by these agencies. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

	streambed areas at a 1:1 ratio relative to impacts. Permanent impacts to resources subject to California Department of Fish and Game jurisdiction under Section 1602 of the Fish and Game Code that may occur within the development envelope (a maximum of 14.6 acres) shall be mitigated by the creation of comparable habitat at either a 1:1 or 2:1 ratio. The following measures apply to impacts to unvegetated streambeds and riparian areas subject to California Department of Fish and Game jurisdiction under Section 1602 of the California Fish and Game Code, and wetland and water resources under the jurisdiction of the United States Army Corps of Engineers pursuant to Section 404 of the Clean Water Act as described in Impact 4.4-3. a. Creation of riparian habitat shall occur at suitable sites in or adjacent to the stream courses, in areas where there are appropriate hydrologic conditions to create self-sustaining riparian habitat, or in areas where bank stabilization would occur. All mitigation sites shall contain suitable surrounding land uses that are compatible with a self-sustaining functioning riparian vegetation community. b. Replacement riparian habitat for impacts to United States Army Corps of Engineers and California Department of Fish and Game jurisdictional areas shall be designed to replace the functions and values of the habitat being removed. The replacement habitat will have similar dominant trees and understory shrubs and herbs (excluding exotic species) to those of the affected vegetation communities. In addition, the replacement habitat shall be designed to emulate the density and structure of the affected riparian habitat once the replacement habitat has met the mitigation success criteria. Average plant spacing shall be determined based on an analysis of habitat to be replaced. The Master Developer shall develop plant spacing specifications for all riparian habitat and wetlands/waters to be created, enhanced, or restored. c. Each tree and shrub species used in restoration shall have a minimum of 80% survivorship after 3 years and 70% survivorship after 5 years. Natural recruitment of native species may be used to offset percent survivorship of planted trees and shrubs to achieve native vegetation cover standards.	

	Performance standards for cover shall be developed by the Project Biologist in consultation with the California Department of Fish and Game for each individual vegetation community type being created, based on the observed natural cover in common or private open space. d. Minimum growth, survivorship, and cover performance at the mitigation sites shall be measured based on random samples taken during years 3 and 5 at each individual mitigation site, or at other sampling intervals if an agency-approved alternative methodology is used. If the minimum growth, survivorship, and/or cover are not achieved at the time of the 3- and 5-year evaluations, then the Master Developer shall be responsible for taking the appropriate corrective measures to achieve the specified growth, survivorship, and/or cover criteria. The Master Developer shall be responsible for any costs incurred during the revegetation or in subsequent corrective measures. If "acts of God" (flood, fires, or drought) occur after the habitats have met the 3-year criteria for growth, survival, and cover, the Master Developer will not be responsible for replanting damaged areas. If these events occur prior to the plants meeting the 3-year criteria, the Master Developer shall be responsible for replanting the area one time only. e. Restoration/creation sites shall be weeded to prevent an infestation of perennial non-native invasive weeds. Weeding can be accomplished using the following methods: hand removal, use of herbicides in accordance with federal and state laws governing the use of herbicides, and/or mechanically in coordination with the Project Biologist. All perennial, non-native invasive weed species (e.g., giant reed, pampas grass, sweet fennel, perennial pepperweed, castor bean, and tamarisk) shall be controlled for a period of 5 years after the initial mitigation, or until the 5-year mitigation success criteria described in the detailed wetlands mitigation plan are met. The cover of annual, non-native plant species at the mitigation sites shall not exceed 10% at any time during the period of documenting successful restoration.	

	f. Temporary irrigation or irrigation via a vehicle with water capabilities will occur as necessary for plant establishment. Irrigation will continue as needed to meet the 3-year performance criteria regarding survivorship and growth. Irrigation will be terminated in the fall to provide the least stress to plants. g. A mitigation status report shall be submitted to the United States Army Corps of Engineers and California Department of Fish and Game annually for the life of the permits or until 5 years after all mitigation has been completed. This report shall include any required plans for plant spacing, locations of candidate restoration and weed control sites, restoration methods, and restoration performance standards. For active mitigation sites, the report shall include the survival, percent cover, and height of planted species; the number by species of plants replaced; an overview of the revegetation effort and its success in meeting performance criteria; the method used to assess these parameters; and photographs. h. Riparian habitat under the jurisdiction of the United States Army Corps of Engineers and California Department of Fish and Game temporarily impacted by the proposed project may be restored through a passive restoration approach. The Project Biologist shall evaluate the progress of any passive restoration approaches in the temporary impact areas to determine if natural recruitment has been sufficient for the site to eventually reach performance goals without active restoration. In the event that native plant recruitment is determined by the Project Biologist to be inadequate for successful habitat establishment, the Master Developer shall revegetate the temporary construction areas in accordance with the methods designed for permanent impacts discussed above (i.e., seeding, container plants, and/or a temporary irrigation system may be recommended). This will maximize the likelihood of the success of temporary mitigation areas. Riparian habitat temporarily disturbed by construction activities will also be weeded annually, as needed, for up to 5 years following construction. Weeds will be removed by hand,	

	by an approved herbicide application, and/or by mechanical equipment. These areas will be monitored annually for 5 years after construction to document establishment of appropriate riparian habitat. If the native plant cover does not reach 50% of the pre-construction native plant cover, the Master Developer shall revegetate the temporary construction area per the program outlined above for permanent riparian habitat or wetland impacts. Annual monitoring reports on the status of the recovery of temporarily disturbed areas shall be submitted to the United States Army Corps of Engineers and California Department of Fish and Game as part of the annual mitigation status report.				
#78 **4.4-2**	**MM 4.4-48:** The project shall avoid and preserve 82% of the site's oak-dominated habitat and 87% of the oak canopy within open space and Special Management Areas which will be managed by the Project Conservation Managers in compliance with the Oak Resource Management Plan included as Appendix G of the "Tejon Mountain Village Biological Resources Technical Report" (Appendix E-1). Oak tree preservation plans shall outline impact avoidance measures, and oak tree protection, preservation, and management guidelines for retained trees. Approval and enforcement of the criteria outlined in the oak tree preservation plans for custom lots will be the responsibility of Property Owner's Association. Contractors, consultants, TMV staff, and others who will be on site for any period of time prior to or during construction will receive education from the project biologist regarding preservation of oak trees.	Prior to the issuance of grading permits	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#79 **4.4-2**	**MM 4.4-49:** Prior to initiating grading in each planning area, active and passive restoration of large oak-dominated open space in the planning area shall be implemented by the Master Developer in conformance with restoration planting plans prepared by the Project Biologist.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. The Project Biologist will submit restoration planting plans to the Kern County Planning Department prior to issuance of grading in each planning area.			
#80 **4.4-2**	**MM 4.4-50:** Prior to initiating grading in each planning area, enhancement and restoration to encourage natural regeneration of oaks within the oak-dominated open space in that planning area will be undertaken, both to increase overall tree populations and to establish successional populations (i.e., to encourage conditions where woodlands would be characterized by a natural diversity of trees ranging from seedlings and saplings to varying ages of semi-mature and mature trees). This will be accomplished through livestock grazing management and population management; focused non-native grass management, including timed and managed mowing or grazing at recruitment and planting areas to reduce competition; supplemental acorn planting and protection; and adaptive management techniques. The Master Developer and the Project Biologist are responsible for implementing this measure until completion of mitigation and transfer of the maintenance responsibility to the Project Conservation Managers.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.4-50 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. The Kern County Planning Department will verify the note prior to approval. D. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#81 **4.4-2**	**MM 4.4-52:** Prior to installation of landscaping, landscape plans in the urban-ranchlands interface shall be reviewed by the Project Biologist to verify that site-sensitive landscape is installed by the Master Developer within development areas. Site-sensitive landscaping, in this case, refers to planting a variety of oak tree sizes and limiting landscape planting to compatible species. The goal is to maintain the Tejon Mountain Village landscape heritage, reduce the introduction of non-native (invasive) species, and soften the edge between urban and ranchland areas. Tree plantings in the wildland/urban interface and developed areas shall include: a. Seedlings and 1-, 5-, and 15-gallon trees in areas where temporary irrigation is available for establishment; b. 5- and 15-gallon trees on favorable development slopes and within the communities; c. Relocation of small trees (less than 5-inch trunk diameter at breast height), if any are encountered within the impact area, through a rapid relocation process due to the scarcity and value of these juvenile trees on the project site.	Prior to approval of fuel modification plans	Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. MM 4.4-52 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the approval of fuel modification plans, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			
#82 **4.4-2**	**MM 4.4-53:** Prior to initiating grading in each planning area, acorns shall be collected from the site by the Project Biologist and subject to adaptive management alterations, for planting and growing at an onsite nursery to provide genetically consistent plant material. Protective root and shoot cages shall be used to reduce rodent and browse damage as part of the adaptive management program to increase overall success.	Prior to issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. MM 4.4-53 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable.			

#83 **4.4-2**	**MM 4.4-54:** Long-term monitoring shall be conducted by the Project Biologist throughout the acorn and tree establishment period of up to 7 years and then shall be continued through adaptive management by the Project Conservation Managers.	Prior to the issuance of grading permits	Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. MM 4.4-54 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable..			

#84 **4.4-2**	**MM 4.4-55:** Existing oak trees within the development envelope and fuel modification zone shall be preserved as practicable through the following measures: a. A pre-grading tree inventory by the Project Biologist shall occur to identify trees that may be preserved in place with protection measures. Oak tree inventory data will be used for the disturbance footprint in combination with efforts to minimize oak tree disturbance through building positioning and other protection measures. b. On custom lots, oak tree preservation plans shall be required with landscape plans for approval before implementation in accordance with Appendix B, Design Guidelines, of the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256 (Appendix B-1). c. Contractors, consultants, Tejon Mountain Village staff, and others who will be on site for any period of time prior to or during construction shall receive education from the Project Biologist regarding preservation of oak trees. d. Under the direction of the Project Biologist, temporary fencing (orange webbed polypropylene barricade fence or similar) shall be provided for preserved oak trees or groupings on custom lots that are within 50 feet of active construction areas, unless natural site terrain features provide adequate oak tree protection. No parking, material storage, or chemical storage or spills are allowed within the fenced areas. e. All upslope grading and drainage shall be designed to minimize erosion, soil compaction, or drainage into protected oak-dominated habitats or areas. Surface runoff created by grading shall be directed away from retained oak trees or will be gathered outside the tree dripline by a swale or other means. No water shall be allowed to pool or collect within the dripline of any oak tree. Implementation of this measure shall be the responsibility of the Master Developer in coordination with the Project Biologist.	Prior to the issuance of grading permits for applicant installed improvements and custom lots	Kern County Building Inspection Department; Kern County Planning Department; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern Country Planning Department that it has retained a full-time project biologist whose responsibility is to fulfill the terms of the EIR biological resources mitigation measures, as applicable. C. Prior to issuance of grading permits for custom lots, applicant shall provide evidence to Kern County Building Inspection Department that an Oak Tree Preservation Plan has been prepared per the requirements of the Design Guidelines. D. The Kern County Planning Department will verify the documentation prior to issuance of grading permits.			

	f. Construction access shall be closely managed by the Master Developer and Project Biologist to minimize unintentional impacts to oaks, including root systems and crowns. g. Consistent with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), dead or hazardous branches may be removed by a qualified International Society of Arboriculture (ISA) -certified arborist, but only if necessary to reduce hazards at a particular location or to minimize tree damage from heavy equipment. Branch removal will be conducted following a survey for nesting birds by the Project Biologist or before or after the migration period. h. Grade changes, including cut or fill, occurring within 25 feet of an oak tree's canopy shall be conducted in a manner that minimizes impacts to the tree, including use of retaining walls, air-spade, root-friendly equipment, directional drilling, and other measures as determined by a qualified arborist. These grade changes will be noted on construction plans. i. Wherever possible, underground utilities will avoid crossing under canopies of preserved oak trees. Where utilities cross tree roots, the tree will be considered impacted and will be provided with post-impact management measures including monitoring, supplemental irrigation, if determined necessary, application of organic mulch under the tree drip line, soil aeration, and in some situations, application of liquid root growth stimulants, as necessary. To further reduce oak impacts from underground utilities, such utilities will be clustered to avoid multiple trenches wherever compatible. j. Where oak trees will be impacted but retained on site by the Master Developer, the Project Biologist shall monitor the impact and direct procedures that will result in reduced impact, including: i. Using a root pruner to make clean cuts at 90° angles, ii. Placing moist burlap over cut, exposed roots until they are backfilled, iii. Backfilling with native soil to prior natural grade,	

	iv. Providing supplemental irrigation (via water truck or a temporary irrigation system) to trees with greater than approximately 20% root loss adjacent to construction, v. Avoiding impermeable surfaces within the dripline and minimizing them within 15 feet of tree canopies, vi. Placing decking near oak trees on concrete piers rather than on poured foundations. k. The use of species known to host the sudden oak death fungus (Phytophthora ramorum) will be prevented through plan-check of landscape plant palettes by the Master Developer. There are numerous plant species, including trees, shrubs, and groundcovers that are susceptible to sudden oak death and these species shall be prohibited from inclusion in landscapes on the project site. Appendix D of the Oak Resources Management Plan (Appendix G of the Tejon Mountain Village Biological Resources Technical Report [Appendix E-1 of this Draft EIR) includes a list of these species and updates shall be provided by the Project Biologist. l. Planting beneath oak canopies shall limited by the Master Developer to plants with soil moisture requirements compatible with oaks (infrequent winter water). Preferably, areas beneath oak canopies will be left unplanted, with the only landscape addition being suitable organic mulch.	

#85 **4.4-2**	**MM 4.4-56:** Prior to issuance of a certificate of occupancy of residential development within each planning area, a communitywide oak education and awareness campaign will be promoted through the community website and/or newsletter established by the Master Developer and maintained by the Project Conservation Managers.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. MM 4.4-56 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. B. The Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of residential certificates of occupancy, applicant shall provide evidence to Kern County Building Inspection Department that an oak tree education program is available for homeowners.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that project environmental effects after such mitigation are reduced to a less-than-significant level. Cumulative impacts are significant and unavoidable.					

4.5 Cultural Resources					
#86 **4.5-1**	**MM 4.5-1:** The project proponent shall provide the Kern County Planning Department with a map indicating the location of each of the identified archaeological sites. This map will be kept in confidentiality by the Kern County Planning Department.	Prior to approval of TTMs	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any TTM, the applicant shall provide the Kern County Planning Department with a map indicating the location of each identified archaeological sites.			
#87 **4.5-1**	**MM 4.5-2:** Prior to the submittal of any building, grading, or construction application to Kern County, the project proponent shall request that the Tejon Mountain Village Design Review Committee provide a letter indicating whether the proposed activity is located within 2,500 feet of a archaeological site. This letter will be submitted to Kern County with the building, grading, or construction application. If the proposed activity is located within 2,500 feet of an archaeological site, County Staff shall make sure the appropriate mitigation measures listed below are observed.	Prior to approval of grading, street improvement or building plans	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant or the Tejon Mountain Village Design Review Committee will provide a letter to the Kern County Building Inspection and Planning Departments indicating whether the proposed activity is located within 2,500 feet of an archaeological site.			
#88 **4.5-1**	**MM 4.5-3:** Prior to ground disturbing activities, all earth-moving and excavation contractor employees shall attend a "tailgate" session informing them of the potential for inadvertently discovered cultural resources and/or human remains, and protection measures to be followed to prevent destruction of any and all cultural resources discovered on site. The applicant's designated project construction manager, a qualified archaeologist, and a qualified cultural resource manager/monitor from a local	Prior to issuance of grading permits	Kern County Planning Department; Kern County Engineering & Survey Services Department; TMV Design Review and Approval Committee		

	California Native American tribe shall conduct the orientation. The orientation will include information regarding the potential for objects to occur on site, a summary of applicable environmental law, procedures to follow if potential cultural resources are found, and the measures to be taken if cultural resources and/or human remains are unearthed as part of the project. Within 14 days of the session, the project construction manager shall submit to the Kern County Engineering & Survey Services Department a summary report that includes the following information: a. When and where the session took place; b. Topics discussed in the session; and c. A session attendance roster signed by the employees at the tailgate session. A copy of the report will be provided to the Southern San Joaquin Valley Information Center and maintained on site.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of grading permits, the applicant shall provide evidence to the Kern County Planning Department that it has contracted with a qualified archaeologist and Cultural Resource monitor to give a "tailgate" session with the project construction manager and crew and take role call at the session C. Within 14 days, the project construction manager shall submit a report of the "tailgate" session to the Kern County Engineering & Survey Services Department D. The project construction manager shall maintain a copy of the report on-site and submit a copy to the Southern San Joaquin Valley Information Center

#89 **4.5-1**	**MM 4.5-4:** Site CA-KER-4010, a bedrock mortar station, has been destroyed by natural erosional processes, lacks integrity, and is not significant or unique. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#90 **4.5-1**	**MM 4.5-5:** Site CA-KER-4389, a bedrock mortar station, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#91 **4.5-1**	**MM 4.5-6:** Site CA-KER-4391, a bedrock mortar station, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#92 **4.5-1**	**MM 4.5-7:** Based on Phase II test excavations, no archaeological site was present at CA-KER-6710. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#93 **4.5-1**	**MM 4.5-8:** Site CA-KER-6712, a bedrock mortar station, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#94 **4.5-1**	**MM 4.5-9:** Site CA-KER-6718 was recorded during Phase II testing. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#95 **4.5-1**	**MM 4.5-10:** Site CA-KER-6719, a bedrock mortar station, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading work within the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#96 **4.5-1**	**MM 4.5-11:** Site CA-KER-6721 was recorded during Phase II testing. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#97 **4.5-1**	**MM 4.5-12:** Site CA-KER-6728 was subject to Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#98 **4.5-1**	**MM 4.5-13:** Site CA-KER-6733H, which is an historical cairn, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#99 **4.5-1**	**MM 4.5-14:** Site C CA-KER-6743, a bedrock mortar station, has been mitigated by the completion of Phase II test excavations. To ensure that additional remains are not uncovered and disturbed during development, the site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#100 **4.5-1**	**MM 4.5-15:** Site CA-KER-127 is a village site immediately adjacent to the existing Lake Drive. This site shall be preserved in place and capped with geotextile matting and fill. Prior to any construction of grading within 100 meters of the site, the site and a 25-meter buffer (where feasible) shall be staked to prevent disturbance. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing and topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#101 **4.5-1**	**MM 4.5-16:** Site CA-KER-265 is a prehistoric camp. This site shall be preserved in place. Locus A of this site is adjacent to the existing Bear Trap Ranch Road, and it shall be capped with a geotextile matting and fill. The route of Bear Trap Ranch Road will either be shifted north, beyond the site boundary, or the improved roadbed will be placed within but not through the fill capping. Utilities that may overlie the areas capped with geotextile matting and fill will be embedded within the fill cap, above the geotextile mat, or routed north of the site boundary. Native American monitors shall be present during any work on the site. Archaeological monitors may also be present if desired by the proponent. Locus B, which is on a nearby but separate and isolated landform, shall be passively preserved intact. Prior to any construction or grading within 100 meters of Locus B, the site and a 25-meter buffer (where feasible) shall be staked to prevent disturbance. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in this 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#102 **4.5-1**	**MM 4.5-17:** Site CA-KER-307, the historical village of Kashtiq, is preserved under existing geotextile matting and capping fill, under Lake Drive. Native American monitors shall be present during any work on the site, including but not limited to, any staking activities, grubbing or topsoil grading within 100 meters of the preserved site area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#103 **4.5-1**	**MM 4.5-18:** Site CA-KER-4009, a prehistoric camp, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. Native American monitors shall be present during any work on the site. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of the applicable TTM	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 4009, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. If any work will be done on site, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#104 **4.5-1**	**MM 4.5-19:** Site CA-KER-4011, a large camp, shall be preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent. If the construction requires encroachment on the bedrock mortars on the south side of the site and upslope of the archaeological deposit, these shall be covered with geotextile matting and fill and preserved in place prior to construction. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of the applicable TTM (for the easement) and grading permit (for the monitor)	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 4009, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. Prior to approval of a grading permit adjacent to CA KER 4011, the applicant shall provide evidence to the Kern County Building Inspection Department that it has contracted with a qualified Cultural Resource monitor. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#105 **4.5-1**	**MM 4.5-20:** Site CA-KER-4390, a prehistoric camp, is outside the development envelope and shall be passively preserved in place. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 4390, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#106 **4.5-1**	**MM 4.5-21:** Site CA-KER-6704 is a camp with human burials that are covered by approximately 2 meters of natural soil located outside the development envelope. The site and a 25-meter buffer will be passively preserved in place. The site and the 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 6704, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#107 **4.5-1**	**MM 4.5-22:** Site CA-KER-6705 is a prehistoric campsite located near the existing Lake Drive. If Lake Drive is expanded in a manner that would encroach on CA-KER-6705, the site shall be preserved under geotextile matting and capping fill. Utilities that may overlie the geotextile matting and fill will be embedded within the fill cap, above the geotextile mat, or routed southeast of the site. Prior to any construction or grading within 100 feet of the site, the site and a 25-meter buffer shall be staked to prevent disturbance. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 6705, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#108 **4.5-1**	**MM 4.5-23:** Site CA-KER-6709H is a historical site adjacent to Rising Canyon Road that shall either be avoided and passively preserved in place or capped with geotextile matting and fill. Utilities that may overlie the geotextile matting and fill will be embedded within the fill cap, above the geotextile mat, or routed northeast of the site. Native American monitors shall be present during any work on the project site, including but not limited to, staking activities, construction, grubbing or topsoil grading within 100 meters of the preserved site area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 6709H, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#109 **4.5-1**	**MM 4.5-24:** Site CA-KER-6711, a rock ring site, shall be passively preserved in place in a nondevelopment area that will either be deed-restricted or encumbered by a conservation easement. Native American monitors shall be present during any work within 100 meters of the site. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of an applicable TTM	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of TTM including CA KER 6711, the applicant shall provide evidence to Kern County Planning Department that the site will be covered by a conservation easement or deed restricted. C. If any work is done on the site, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#110 **4.5-1**	**MM 4.5-25:** Site CA-KER-6716 is a village site located near a road and shall either be avoided and passively preserved in place or capped with geotextile matting and fill. Utilities that may overlie the geotextile matting and fill will be embedded within the fill cap, above the geotextile mat, or routed southeast of the site. Prior to any construction or grading within 100 meters of the site, the site area and a 25-meter buffer shall be staked to prevent disturbance. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading work in this 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#111 **4.5-1**	**MM 4.5-26:** Site CA-KER-6720, a rock ring site, shall be preserved in place in a nondevelopment area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent. If the construction requires encroachment on the bedrock mortars on the south side of the site and upslope of the archaeological deposit, these shall be covered with geotextile matting and fill and preserved in place prior to construction. Native American monitors shall be present during any work in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6720, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. Prior to approval of a grading permit adjacent to CA KER 6720, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#112 **4.5-1**	**MM 4.5-27:** Site CA-KER-6722 is a campsite located near the existing Lake Drive. Prior to any construction or grading within 100 meters of the site, the site area and a 25-meter buffer shall be staked to prevent disturbance. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in this 100-meter area. Archaeological monitors may also be present if desired by the proponent. Any expansion of Lake Drive to the northwest into the site area shall require preservation of the affected site area under geotextile matting and capping fill. Utilities that may overlie the geotextile matting and fill will be embedded within the fill cap, above the geotextile mat, or routed southeast of the site. Native American monitors shall be present during any work in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 6722, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#113 **4.5-1**	**MM 4.5-28:** Site CA-KER-6725, a prehistoric camp, is outside the development envelope and shall be preserved in place by avoidance or by coverage with geotextile matting and fill. Utilities that may overlie covered areas of the site will be embedded within the fill cap, above the geotextile mat, or routed east of the road and site area. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a grading permit adjacent to CA KER 6725, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#114 **4.5-1**	**MM 4.5-29:** Site CA-KER-6726 is a large campsite outside the development envelope that shall be passively preserved in place. A small rock ring associated with the site shall be staked with a 5-meter buffer prior to construction, and shall be preserved in place in a non-development area subject to an easement or deed restriction. Native American monitors shall be present during any work within 100-meter area of the site. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of a grading permit	Kern County Planning Department; Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6726, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. Prior to approval of a grading permit adjacent to CA KER 6726, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#115 **4.5-1**	**MM 4.5-30:** Site CA-KER-6727, a prehistoric campsite, shall either be passively preserved in place or subject to Phase III data recovery. If the site area is preserved, it shall be staked prior to any construction or grading within 100 meters. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in this 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of a grading permit	Kern County Planning Department; Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6727, the applicant shall either provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction or will be subject to a Phase III data recovery. C. Prior to approval of a grading permit within to CA KER 6727, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities			

#116 **4.5-1**	**MM 4.5-31:** Site CA-KER-6731, a bedrock mortar station, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. Native American monitors shall be present during any work within 100 meter area of the site. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6731; the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. If any grading or construction activities are proposed adjacent to CA-KER-6731, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities			

#117 **4.5-1**	**MM 4.5-32:** Site CA-KER-6737, a bedrock mortar station, shall be passively preserved in place in a nondevelopment area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of a grading permit	Kern County Planning Department; Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6737, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. Prior to approval of a grading permit adjacent to CA KER 6737, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities			

#118 **4.5-1**	**MM 4.5-33:** Site CA-KER-6739, a series of small rock rings, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to a applicable TTM or issuance of a grading permit	Kern County Planning Department and Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6739, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction.Prior to approval of a grading permit adjacent to CA KER 6739, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#119 **4.5-1**	**MM 4.5-34:** Site CA-KER-6742, a campsite, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of a grading permit	Kern County Planning Department and Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6742, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. Prior to approval of a grading permit adjacent to CA KER 6742, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#120 **4.5-1**	**MM 4.5-35:** Site CA-KER-6744, a prehistoric camp, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. The site and a 25-meter buffer shall be staked prior to any construction or grading within 100 meters of the site. Native American monitors shall be present during any work on the site, including, but not limited to, staking activities, grubbing or topsoil grading in the 100-meter area. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM or issuance of grading permit	Kern County Planning Department; Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6744, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. Prior to approval of a grading permit adjacent to CA KER 6744, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#121 **4.5-1**	**MM 4.5-36:** Site CA-KER-6745, a prehistoric camp, shall be passively preserved in place in a non-development area that will either be deed-restricted or encumbered by a conservation easement. Native American monitors shall be present during any work within 100 meter area of the site. Archaeological monitors may also be present if desired by the proponent.	Prior to approval of a applicable TTM	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM that includes CA KER 6745, the applicant shall provide evidence to Kern County Planning that the site will either be encumbered by a conservation easement or deed restriction. C. If any grading or construction activities are proposed within 100 meters or adjacent to the site, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. D. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. E. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#122 **4.5-1**	**MM 4.5-37:** Native American monitors shall be present during any work on the site, including, but not limited to staking activities, grubbing or topsoil grading work required to complete the water system improvements to the existing California Aqueduct turnout described in Section 3.5.3.2 and Figure 4.16.2 of this FEIR. Archaeological monitors may also be present if desired by the proponent.	Prior to issuance of a improvement plans for the water system improvements to the CA Aqueduct	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of the improvement plans for the water system improvements to the CA Aqueduct, the applicant shall provide evidence to the Kern County Building Inspection and Planning Department that it has contracted with a qualified Cultural Resource monitor to be present onsite during any grading work within the 100-meter designated area. If the proponent desires an archaeologist to also be present, the applicant shall provide evidence that it has also contracted with qualified archaeologist monitor. C. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. D. The Kern County Planning Department will verify the documentation prior to initiating construction activities.			

#123 **4.5-2**	**MM 4.5-38:** A qualified professional vertebrate paleontologist with regional experience shall monitor all excavations within the project site that are identified as having a high sensitivity for Pleistocene sediments as identified in Figure 4.5-1 in the Castac Lake basin and shown on the Tejon Mountain Village Special Plan No. 1, Map 256. If paleontological resources are exposed by excavation in the Pleistocene sediments bordering Castac Lake, work shall be redirected to another area until scientific significance of the finds is assessed. Paleontological monitors shall notify the onsite construction monitoring coordinator regarding any finds. The paleontological monitor will then assess the significance of the finds. The paleontologist will be retained to perform inspection of the excavation and to salvage exposed significant resources as necessary. Where feasible, standard samples (6,000 pounds [2,724 kilograms or 2.4 cubic meters] each) of fossiliferous sediment may be collected for recovery and identification of terrestrial microvertebrates (rodents, birds, rabbits). If fossils are discovered, work shall be redirected to another area nearby until the scientific significance of the find is assessed. If fossil-bearing alluvium is encountered at depth, fossils shall be salvaged only when determined, upon examination in the field, to be diagnostic or potentially diagnostic. Large vertebrate fossils exposed by excavation shall be expeditiously jacketed with plaster bandages or strips of burlap saturated with plaster, then removed and returned to a paleontology laboratory for preparation, identification, and permanent storage. Standard samples (6,000 pounds [2,724 kilograms or 2.4 cubic meters] each) of sediment of fossiliferous sediments shall be salvaged from designated microfossil sampling localities. This sedimentary matrix shall be stockpiled on site and subsequently processed; recovered specimens shall be identified and curated. Contextual data associated with the resources shall be recorded in the field, and sites shall be photo documented. The preservation of significant fossils (if found during construction) by removal will occur as described above, unless such removal is not feasible. In cases where the fossils cannot be removed immediately, the location of the fossils shall be	Prior to issuance of a grading permit in the Castac Lake Basin	Kern County Building Inspection Department; Kern County Planning Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Vinac for vertebrate fossils). Data recovery in these cases shall include documentation of pertinent data (lithology, stratigraphy, taphonomy, etc.) as well as photo documentation where possible. C. MM 4.5-38 will be included as a note on all approved final subdivision maps and approved site plans. D. Kern County Planning Department will verify the note and compliance prior to approval. E. Prior to the issuance of a grading permit in the Castac Lake Basin, applicant shall provide evidence to Kern County Building Inspection Department that it has entered into a contract with a professional paleontologist monitor. F. The applicant will submit documentation to the Kern County Building Inspection Department regarding steps to comply during grading. G. The Kern County Planning Department will verify the documentation prior to issuance of grading permits. H. The Building Inspector will verify during regular inspections.			

	stabilized to prevent further deterioration prior to data recovery under the direction of a qualified vertebrate paleontologist. Stabilization in these cases can (as necessary and safely feasible) include the following: removal of overburden, exposure of the resources, and application of an appropriate hardening agent (e.g., Vinac for vertebrate fossils). Data recovery in these cases shall include documentation of pertinent data (lithology, stratigraphy, taphonomy, etc.) as well as photo documentation where possible.				
#124 **4.5-2**	**MM 4.5-39:** If the onsite paleontological monitor is required to assess the significance of an exposed fossil or other paleontological resources, the monitor shall stake off and flag an area of 2 meters on all sides of the find in order to alert equipment operators to the presence of a potential resource. The paleontologist shall then further expose the find in order to assess its potential significance and determine the appropriate recovery requirements. Construction crews must avoid these staked-off and flagged areas by at least 6 meters until the paleontologist has authorized continued excavation. Construction workers and other construction contractor personnel shall be forbidden from collecting scientifically significant fossils from any construction area during construction. Upon uncovering a potential resource, construction personnel shall be required to immediately divert excavation activities away from the potential site. Suspected resource localities must be avoided by at least 6 meters until the onsite paleontologist has approved further excavation. After diverting construction equipment, operators and crewmembers must contact the paleontological monitor, who shall coordinate next steps as provided in Mitigation Measure 4.5-38.	Prior to the issuance of a grading permit in the Castac Lake Basin	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.5-39 will be included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note and compliance prior to approval. D. Prior to the issuance of a grading permit in the Castac Lake Basin, applicant shall provide evidence to Kern County Building Inspection and Planning Departments that it has entered into a contract with a professional paleontologist monitor. E. The Kern County Planning Department will verify the documentation prior to issuance of grading permits. F. The Building Inspector will verify during regular inspections.			

#125 **4.5-2**	**MM 4.5-40:** For all macro- and microfossils (vertebrate, invertebrate, and/or plant) recovered during the field reconnaissance or during construction, a data recovery program shall be undertaken. This program will include preparation of recovered specimens to a point of identification and permanent preservation (including screen washing of fossiliferous sediment samples to recover small to microscopic vertebrate fossils); preparation of large vertebrate fossils recovered in plaster jackets; long-term stabilization of all recovered significant fossils; and analysis. The paleontological monitoring and salvage team shall include an expert in vertebrate paleontology. If specimens are discovered, a final report, including an itemized and accessioned inventory of recovered specimens, shall be prepared by a professional vertebrate paleontologist and shall be distributed to the appropriate lead agencies. This report will include any important mega-invertebrate fossil localities and/or fossil plant localities.	Prior to the issuance of grading permits in the Castac Lake Basin	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.5-40 will be included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note and compliance prior to approval. D. Prior to the issuance of a grading permit in the Castac Lake Basin, applicant shall provide evidence to Kern County Building Inspection and Departments that it has entered into a contract with a professional paleontologist monitor. E. The Kern County Planning Department will verify the documentation prior to issuance of grading permits. F. The Building Inspector will verify during regular inspections.			

#126 **4.5-2**	**MM 4.5-41:** All fossil remains recovered during construction and associated development activity shall be offered for curation at the expense of the developer at a recognized, permanent repository accredited with the American Association of Museums. This curation ensures the long-term preservation of any and all recovered paleontological resources. The nearest accredited, permanent, professional repositories to Tejon Mountain Village are the San Bernardino County Museum, the Natural History Museum of Los Angeles County, and the Raymond Alf Museum. A memorandum of agreement for curation between the developers and the repository shall be reviewed and approved; this memorandum will provide rights to these materials for guaranteed future research access. If the offered materials are not accepted by the repository, the developer shall be free to retain the materials on site or dispose of them appropriately.	Prior to the issuance of a grading permit in the Castac Lake Basin	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.5-41 will be included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note and compliance prior to approval. D. Prior to the issuance of a grading permit in the Castac Lake Basin, applicant shall provide evidence to Kern County Building Inspection and Planning Departments that it has entered into a contract with a professional paleontologist monitor. E. The Kern County Planning Department will verify the documentation prior to issuance of grading permits. F. The Building Inspector will verify during regular inspections.			
#127 **4.5-3**	**MM 4.5-42:** In the event of an accidental discovery of any human remains, the steps and procedures specified in California Health and Safety Code Section 7050.5, State CEQA Guidelines Section 15064.5(e) (OPR 2004), and California Public Resources Code Section 5097.98 shall be implemented. No further disturbance will occur until the County coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. Construction must halt in the area of the discovery of human remains, the project proponent must ensure that the area is protected, and consultation and treatment will occur as prescribed by law.	Prior to the issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.5-42 will be included as a note on all approved final subdivision maps and approved site plans.			

	The Native American Heritage Commission acts as a central point of contact for notification of Native Americans, of arbitration between the Native American representative and the property owner (who is also the owner of the remains), and of any associated archaeological materials. These procedures concerning 1) notification of discovery of Native American human remains, 2) descendants, and 3) disposition of human remains and associated grave goods are set forth in Public Resources Code Section 5097.98. The process is as follows: a. **Discovery.** If human remains are discovered (in either an archaeological or construction context), Tejon Ranch Company or its designated representative shall notify the County coroner. The area of the discovery will be protected from disturbance. The coroner shall determine if the remains are or are suspected to be of Native American origin (California Health and Safety Code Section 7050.5). This is often done in consultation with the archaeological investigator or in consultation with a forensic or physical anthropologist. If this determination is made, the coroner will notify the Tejon Ranch Company, or its representatives, and the Native American Heritage Commission. b. **Notification of Most Likely Descendent.** If Native American human remains are discovered, the applicant and the Native American Heritage Commission shall immediately notify the Most Likely Descendent. The Most Likely Descendent will have 24 hours from the time he or she is contacted to inspect the remains and make recommendations to the applicant regarding the disposition of the remains. c. **Protection of Human Remains.** Qualified archaeological field staff shall work with the construction crew to establish a reasonable buffer zone around a discovery. Because work must stop if other discoveries are anticipated, identifying areas where work can safely continue would be of paramount importance to maintaining the construction schedule. The area where work must cease shall be marked off with temporary construction fencing or another agreed-upon method. This fencing will clearly designate the area for	C. Kern County Planning Department will verify the note and compliance prior to approval. D. The applicant shall provide evidence to Kern County Building Inspection and Planning Departments that grading plans include the appropriate notes describing contractors' responsibilities related to the accidental discovery of human remains. E. The Kern County Building Inspection Department will verify in the field during the construction period. F. The Building Inspector will verify during regular inspections.

	avoidance and protect it from inadvertent intrusions by machinery, while providing for construction to continue in the remainder of the project area. d. **Removal and Reburial of Human Remains.** Once the above protocols have been applied, excavation or avoidance of human remains shall be required. If excavation is the preferred option, each burial or cremation shall be carefully removed using standard archaeological excavation techniques in the presence of a Native American monitor. The soil matrix surrounding a burial shall also be excavated for the recovery of all associated artifacts. There will be no disturbance of human remains in the absence of a Native American monitor. These excavations shall be conducted in a respectful but efficient manner. The excavations shall be designed to completely remove the burial within 1 to 3 days to allow construction to return to this portion of the project area. Sediments shall be screened through 1/8-inch mesh (if screening is part of the agreement reached with the Most Likely Descendent for disposition of the remains), and cultural materials shall be separated from the sediment matrix. The sediment matrix may be retained for reburial if so requested by the Most Likely Descendent. Crew members shall comport themselves in a respectful manner during these excavations, and access to the excavations shall be restricted to official business to ensure that the burial does not become a "tourist attraction" for curious onlookers, construction workers, other archaeologists, etc. Photos of the burial will be taken only with approval of the Most Likely Descendent, as part of the agreement reached during consultation. All recovered human remains shall be handled respectfully and packaged in a culturally appropriate manner (e.g., wrapped in white cotton fabric and placed within cardboard boxes). Excavated human remains and artifacts shall be	

	removed from the area at the completion of each working day and secured in locked storage. The burial site shall be covered with plywood sheets when excavations are not ongoing. If necessary, overnight security protection shall be provided to protect the discovery from disturbance or vandalism. Once all excavations have been completed and analysis, if any, has also been completed, the recovered Native American remains and associated artifacts and soils matrix shall be legally conveyed to the Most Likely Descendent. The Most Likely Descendent will then determine final disposition of these materials including reburial onsite if requested.				
#128 Lebec Interchange Improvements	**MM 4.5-43:** As a condition of all contracts for the Interstate 5/ Lebec Road interchange improvements and prior to ground disturbing activities, all earth-moving and excavation contractor employees shall attend a "tailgate" session informing them of the potential for inadvertently discovered cultural resources and/or human remains and protection measures to be followed to prevent destruction of any and all cultural resources discovered on site. The applicant's designated project construction manager, a qualified archaeologist, and a qualified cultural resource manager/monitor from a local California Native American tribe shall conduct the orientation. The orientation will include information regarding the potential for objects to occur on site, a summary of applicable environmental law, procedures to follow if potential cultural resources are found, and the measures to be taken if cultural resources and/or human remains are unearthed as part of the project. Within 14 days of the session, the project construction manager shall submit to the Kern County Planning Department and California Department of Transportation a summary report that includes the following information: a. When and where the session took place; b. Topics discussed in the session; and c. A session attendance roster signed by the employees at the tailgate session. A copy of the report shall be provided to the Southern San Joaquin Valley Information Center and maintained on site.	Prior to approval of Lebec/I-5 street improvement plans	Kern County Building Inspection Department; Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall provide evidence to the Kern County Planning Department that it has a contract with a qualified archaeologist and Cultural Resource monitor to give a "tailgate" session with the project construction manager and crew and take role call at the session C. Within 14 days, the project construction manager shall submit a report of the "tailgate" session to the Kern County Planning Department D. The project construction manager shall maintain a copy of the report on-site and submit a copy to the Southern San Joaquin Valley Information Center			

#129 Lebec Interchange Improvements	**MM 4.5-44:** Construction areas for the Interstate 5/Lebec Road interchange improvements shall be staked prior to earthmoving by a qualified archaeologist in consultation with the contractor to indicate the construction area, construction staging area, and buffer. No earthmoving, parking, or materials storage will be allowed outside the staked areas. Prior to construction, the archaeologist shall survey the area to identify any surface artifacts within the staked area. An archaeologist and Native American monitors shall be present during any grubbing or topsoil grading within the staked area. If buried cultural resources, such as flaked or ground stone, historic debris, building foundations, or nonhuman bone, are discovered during ground-disturbing activities, work will stop in that area and within an appropriate buffer area, as determined by the archaeologist. The archaeologist shall assess the significance of the affected cultural resources and, if necessary, develop feasible and appropriate treatment measures in consultation with the improvement project design staff, such as avoidance, capping with geotextile and fill, or Phase III data recovery.	Prior to approval of street improvement plans for Lebec Road/I-5	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans for Lebec Road I-5, applicant shall provide evidence to Kern County Building Inspection Department that it has entered into a contract with a archeologist and Cultural Resource Monitor. C. The Kern County Planning Department will verify the documentation prior to issuance of grading permits. D. The Building Inspector will verify in the field.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.6 Geology and Soils					
#130 **4.6-1**	**MM 4.6-1:** Prior to approval of a final map containing habitable structures within a GS Combining District as identified on the Tejon Mountain Village Special Plan No. 1, Map 256, additional geotechnical studies shall be required and will make recommendations on structure location, foundation design, grading design, and other design criteria as deemed necessary. Based on the results of additional investigations, the geologic consultant would either recommend that 1) the buffer zones be modified or eliminated as appropriate, 2) the proposed habitable structures would be moved outside the buffer zone, or 3) the proposed structure would be eliminated. All remaining fault buffer zones shall be identified on final subdivision maps.	Prior to approval of a final map containing habitable structures within a GS Combining District	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-1 will be included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a Final Tract Map in a GS Combining District, the applicant will submit additional geotechnical studies to Kern County Building Inspection Department.			

#131 **4.6-1**	**MM 4.6-2:** The developer shall maintain a minimum buffer zone width of 50 feet for habitable structures around active fault traces. A minimum setback of 300 feet shall be maintained around all critical facilities, such as fire stations.	Prior to approval of a TTM	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-2 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department			

#132 **4.6-1**	**MM 4.6-3:** Prior to approval of the tentative tract maps or modification of the Tejon Mountain Village Special Plan No. 1, Map 256, for commercial sites, the applicant shall retain a qualified geologic/geotechnical consultant to prepare a site-specific geotechnical feasibility report. The report shall include information regarding borings, test pits, trenches, and laboratory testing appropriate to address tentative tract map design issues. The reports shall provide geotechnical recommendations sufficient to evaluate the geotechnical feasibility of proposed Tentative Tract Map grading and improvement configurations and shall conform to applicable Kern County guidelines.	Prior to approval of TTMs or modification of the Tejon Mountain Village Special Plan No. 1, Map 259, for commercial sites	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-3 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM or modification of the Tejon Mountain Village Special Plan No. 1, Map 259, for commercial sites, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department. E. The Kern County Planning Department will verify documentation prior to approval or modification.			

#133 **4.6-1**	**MM 4.6-4:** Prior to issuance of grading permits for individual project phases within the Tejon Mountain Village, the applicant shall retain a qualified geologic/geotechnical consultant to prepare detailed design-level geotechnical investigations, including an appropriate number of borings, test pits, and trenches as well as laboratory testing to address final project design issues. Design-level geotechnical reports shall be appropriately detailed to address final project construction requirements and conform to applicable Kern County guidelines. Where appropriate, geotechnical mitigation measures shall be depicted on plans prepared by the geotechnical engineer of record or on plan sheets included with final grading plans.	Prior to issuing grading permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-4 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to issuance of a grading permits, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department. E. The Kern County Planning Department will verify documentation prior to approval or modification.			

#134 **4.6-1**	**MM 4.6-5:** Prior to approval of any tentative tract map or the development of commercial sites, the specific subdivision design shall be reviewed to confirm that no habitable structures will be constructed within active-fault buffer zones identified by ECI in its Fault Hazard Report (see Appendix G-2). If development is planned in the vicinity of potentially active faults, prior to completion of tentative tract maps, the applicant shall retain a qualified geologic/geotechnical consultant to prepare an appropriately detailed geologic report and evaluate the age and extent of faulting by fault trenching or other appropriate methods. These studies shall conform to applicable Kern County guidelines. If active fault traces are identified, an active fault buffer zone shall be established, and no habitable structures shall be constructed within the expanded active fault buffer zone.	Prior to approval of a TTM or the Commercial Site Development	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-5 will be included as a note in all approved final subdivision maps and approved site plans. C. Prior to approval of a commercial TTM or Commercial Site Development Permit, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department D. The Kern County Planning Department will verify documentation prior to approval or modification.			

#135 **4.6-1**	**MM 4.6-6:** Prior to approval of tentative tract maps, or development of commercial sites, the applicant shall design measures to minimize risks to new critical utilities that cross active fault traces. Detailed designs shall be provided to the Kern County Engineering and Survey Department prior to approval of final tract maps, and any measures required shall be incorporated into the detailed site plans to be approved by the county. In addition, the project applicant shall ensure that lifeline providers have emergency response plans in place. Methods of mitigation may include, but are not limited to, the following: a. Designing crucial underground utilities that must cross active faults so that they do so at an oblique angle so that the pipelines fail under tension rather than compression. Alignments within and parallel to the fault zone shall be avoided; b. Incorporating redundancy into the design of crucial underground utilities; c. For locations at risk, designing for easy access and repair, with consideration given to providing pre-designed replacement/repair fittings at crucial locations where damage is anticipated; and d. Incorporating shutoff valves, bracing, flexible materials, flexible joints and connections, joint restraints, strengthened support structures, or other means to minimized damage.	Prior to approval of a TTM or Commercial Site Development Permit	Kern County Engineering and Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-6 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a commercial TTM or Commercial Site Development Permit, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department. E. The Kern County Planning Department will verify documentation prior to approval or modification.			

#136 **4.6-1**	**MM 4.6-7:** Prior to approval of the tentative tract map, or development of commercial sites, the applicant shall retain a qualified geologic/geotechnical consultant to perform additional studies and identify areas within the site that may be subject to risk of ground deformation due to secondary fault rupture, ridgetop fissuring, or sackungen. If these conditions are identified, the consultant shall identify a series of appropriate geotechnical engineering measures to prevent building collapse. Prior to issuance of grading permits, the applicant shall prepare site-specific plans depicting the geotechnical methods of mitigation that are appropriate for the proposed construction. Proposed mitigation implementation methods shall be subject to approval by the Kern County Engineering and Survey Department. The following mitigation methods may be implemented by the applicant: a. Avoidance of identified weak zones by establishment of appropriate structural setbacks; b. Construction of a strengthened subgrade designed to resist cracking and ground deformation by over-excavation to a specified depth and reconstruction of the subgrade with engineered fill reinforced with geogrid; and c. Support structures on strengthened foundations, such as post-tensioned slabs, heavy structural mats, or similar means, as recommended by a qualified geotechnical consultant and structural engineer.	Prior to approval of a TTM or Commercial Site Development Permit	Kern County Engineering and Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-7 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM or Commercial Site Development Plan, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department. E. The Kern County Planning Department will verify documentation prior to approval or modification.			

#137 **4.6-1**	**MM 4.6-8:** The developer shall provide emergency shutoff valves for both water and sewer pipelines that may cross the main trace of the Garlock fault.	Prior to approval of water and sewer improvement plans crossing the Garlock fault	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any water or sewer improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include a note requiring emergency shutoff valves C. Kern County Building Inspection Department will verify implementation in the field.			

#138 **4.6-1**	**MM 4.6-9:** The developer shall provide a means to rapidly affect a temporary emergency bypass for any sewer pipelines that cross the main trace of the Garlock fault. An emergency pump-around configuration is the recommended means to accomplish this requirement. The recommended feature will include the ability to pump-around up to 50 feet on either side of the main trace.	Prior to approval of sewer improvement plans that cross the Garlock Fault	Kern County Engineering and Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any water or sewer improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that the sewer improvement plans include a means to rapidly affect a temporary emergency bypass. C. The Kern County Building Inspection Department will verify implementation in the field.			

#139 **4.6-1**	**MM 4.6-10:** The developer shall provide a means to rapidly affect a temporary emergency bypass for water pipelines that cross the main trace of the Garlock fault. Installation of manifolds on the water lines that would accommodate large-diameter hoses is the recommended means to accomplish this requirement. The recommended feature will include the ability to temporarily replace damaged sections up to 50 feet on either side of the main trace.	Prior to approval of improvement plans for water lines that cross the Garlock fault	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any water improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include a means to rapidly affect a temporary emergency bypass. C. The Kern County Building Inspection Department will verify implementation in the field.			

#140 **4.6-1**	**MM 4.6-11:** Sewer and water pipelines crossing the main trace of the Garlock fault shall incorporate design features that cause them to preferentially break at the main trace. Within 50 feet of the main trace, the most appropriate design would be a simple bell and spigot connection that would fail under tension. In addition, the pipelines should be oriented at an oblique angle (i.e., rotated slightly counter-clockwise from perpendicular to the fault) so that the pipelines fail under tension rather than compression.	Prior to approval of improvement plans for sewer and water lines that cross the Garlock fault	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any water or sewer improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include design features that cause them to preferentially break at the main trace. C. The Kern County Building Inspection Department will verify implementation in the field.			
#141 **4.6-1**	**MM 4.6-12:** Away from the main trace of the Garlock fault and in the zone of restricted development, pipelines shall be constructed with constrained joints and/or seamless pipe to allow some movement of the pipe without the pipe failing. During a larger seismic event with significant differential movements, this design feature would force failure at the main trace, where emergency design features could be employed.	Prior to approval of improvement plans for sewer and water lines that cross the Garlock fault	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		

		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of sewer and water improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include evidence that pipelines have been constructed with constrained joints and/or seamless pipe. C. The Kern County Building Inspection Department will verify implementation in the field.			
#142 **4.6-1**	**MM 4.6-13:** Temporary bypass systems shall be employed for sewer and water pipelines crossing the fault identified south of the proposed Village Mixed-Use Area. The temporary pipeline bypasses shall be designed to accommodate pipeline breakage of up to 50 feet on either side of the normal fault.	Prior to approval of sewer and water improvement plans for lines that cross the Garlock fault	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any water or sewer improvement plans that cross the Garlock fault south of the Village Mixed Use Center, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include temporary bypass systems. C. Kern County Building Inspection Department will verify implementation in the field.			

#143 **4.6-1**	**MM 4.6-14:** The project applicant shall work with Southern California Gas Company to install the recommended shutoff valves on the high pressure gas line to provide the capability to stop flows within the line in case of a seismic emergency if existing capabilities are not adequate. These emergency shutoff valves shall be located on each side of the main trace of the Garlock fault where the pipeline crosses the fault or other appropriate location determined by the gas company.	Prior to approval of gas improvement plans that cross the Garlock fault	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of gas improvement plans that cross the Garlock fault, applicant will provide evidence to Kern County Engineering and Survey Services Department that it has requested that Southern California Gas Company install shutoff valves on high pressure gas line to be located on each side of the main trace of the Garlock fault, or other appropriate location determined by the gas company. C. Kern County Building Inspection Department will verify implementation in the field.			

#144 **4.6-1**	**MM 4.6-15:** Any natural gas lines installed within the project site shall be constructed with emergency shutoff valves that engage in the event a line is ruptured.	Prior to approval of gas improvement plans	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval any gas improvement plans, applicant will provide evidence to Kern County Engineering and Survey Services Department that the improvement plans include emergency shutoff valves. C. Kern County Building Inspection Department will verify implementation in the field.			

#145 **4.6-1**	**MM 4.6-16:** The developer shall provide all buyers of any residential or commercial units on the site with disclosure of the location of the Alquist-Priolo Earthquake Fault Zone, the locations of fault buffer zones established for the project, the mapped location of the Garlock fault, and the potential for a seismic event that could cause damage or injury.	Prior to issuance of building permits	Kern County Planning Department; Building Inspection; TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-16 will be included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to issuance of residential or commercial certificates of occupancy, applicant will provide evidence to the Kern County Building Inspection and Planning Departments that buyers of residential or commercial units will receive a disclosure of the location of Alquist-Priolo Earthquake Fault Zone, the locations of fault buffer zones established for the project, the mapped location of the Garlock fault, and the potential for a seismic event that could cause damage or injury.			

#146 **4.6-1**	**MM 4.6-17:** Prior to issuance of the first certificate of occupancy for any residential or commercial unit, the community services district shall prepare—in consultation with the Kern County Emergency Medical Services Department and the Kern County Fire Department—an emergency preparedness and evacuation plan that addresses seismic events. The plan will be provided to all homeowners and business owners in the development and updated on an annual basis.	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection Department; Kern County Fire Department; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-17 will be included as a note in all approved final subdivision maps and approved site plans. C. Prior to issuance of residential or commercial certificates of occupancy, the applicant will provide evidence that an emergency preparedness and evacuation plan that addresses seismic events has been prepared and will be provided to home buyers and business owners. D. Kern County Planning Department will verify the documentation prior to issuance of a certificate of occupancy.			

#147 **4.6-2**	**MM 4.6-18:** Prior to issuance of building permits, building plans shall be prepared and submitted to the Kern County Building Inspection Division for review and approval. Plans will show that all structures within the project site have been designed, and will be constructed, in accordance with seismic safety design criteria specified in the latest California Building Code requirements, at a minimum, or as otherwise recommended by a qualified registered structural engineer. Mitigation measures shall be implemented by the applicant at the time of final design of improvements for subdivision tracts or custom lots. Plans for improvements shall be subject to approval by the Kern County Engineering and Survey Department.	Prior to issuing building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-18 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to approval of building permits, Kern County Building Inspection Department will confirm that all structures have been designed per the California Building Code. D. The Kern County Building Inspection Department will verify compliance in the field prior to final occupancy.			

#148 **4.6-3**	**MM 4.6-19:** Prior to the approval of tentative tract maps, or development of commercial areas where soft fine-grained soils subject to cyclic softening, ground lurching, and compression due to clay/silt consolidation underlie proposed improvements shall be identified based on the tentative-map-level geotechnical reports). The tentative tract maps shall be designed based on consideration of appropriate geotechnical mitigation measures for these soils. Prior to issuance of grading permits, detailed project-specific geotechnical mitigation measures shall be developed based on design-level geotechnical reports and depicted on plans prepared by the geotechnical engineer of record or on plan sheets included with final grading plans. Proposed mitigation methods shall be subject to approval by the Kern County Engineering and Survey Department. The following mitigation methods shall be implemented by the applicant, where appropriate, based on cost and constructability considerations: a. Removal of liquefiable/densifiable/collapsible soils and replacement with engineered fill. Removal and replacement will be feasible above the water table or in dewatered excavations; and b. Liquefiable/densifiable/collapsible soils both above and below the water table can be improved by in situ ground densification using deep dynamic compaction, rapid impact compaction, compaction with vibratory probes (e.g., vibroflotation, terraprobe), stone columns, and/or compaction piles. c. Increase soil density and shear strength and reduce soil moisture content of soils subject to cyclic softening, ground lurching, and static compression through consolidation under fills. The level of soil improvement will be sufficient to bring estimated post-construction settlement or seismic ground deformation to acceptable levels. Depending on the proposed fill thickness and site-specific soil conditions, mitigation could be effected either by proposed project fills or by the application of temporary surcharge fills;	Prior to approval of TTMs or Commercial Site Development Plans	Kern County Engineering & Survey Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-19 as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM or Commercial Site Development Plan, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

	d. Support large, heavy, or multi-story structures on deep foundations, such as driven piles, reinforced concrete caissons, or structural mat foundations, if ground improvement by placement of surcharge fills will not be effective; e. Dewater and remove soft, compressible soils and replace them with engineered fill; and f. Design the project to avoid areas underlain by soils subject to cyclic softening, ground lurching, and static compression.				
#149 **4.6-4**	**MM 4.6-20:** Prior to the approval of tentative tract maps or development of commercial areas, existing landslide maps shall be refined based on tentative-map-level geotechnical reports. Prior to the issuance of grading permits, detailed project-specific geotechnical mitigation methods shall be developed based on design-level geotechnical reports and depicted on plans prepared by the geotechnical engineer of record or on plan sheets included with final grading plans. Detailed site-specific slope stability analyses shall be performed as part of the design-level geotechnical reports to preserve the natural topography, wildlife habitat, and vegetation of the site, mitigation measures shall be implemented only for landslides that directly threaten the proposed improvements. Proposed mitigation methods shall be subject to approval by the Kern County Engineering and Survey Department. The following mitigation methods shall be implemented as required based on cost and constructability considerations: a. Design the project improvements to avoid landslides where possible; b. Incorporate landslide mitigation methods; c. Stabilize landslides through the removal of landslide debris by excavation, complete removal and replacement of landslide debris with engineered fill, partial removal of landslide deposits and construction of engineered shear buttresses, or designing the project to incorporate debris benches and setback areas. Earthwork repairs shall include appropriate subsurface drainage; and d. Stabilize landslides with appropriately engineered earth-retention systems.	Prior to approval of the TTMs or Commercial Site Development Plans and prior to the issuance of grading permits	Developer and Kern County Engineering & Survey Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-20 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM or Commercial Site Development Plan and grading plans, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

#150 **4.6-4**	**MM 4.6-21:** Prior to approval of tentative tract maps, or development of commercial areas where proposed improvements are subject to debris-flow and rockfall hazards shall be identified based on the tentative-map-level geotechnical reports. The tentative tract maps shall be designed based on consideration of appropriate geotechnical mitigation measures for these hazards. Prior to issuance of grading permits, detailed project-specific mitigation methods shall be developed based on design-level geotechnical reports and depicted on plans prepared by the geotechnical engineer of record or on plan sheets included with final grading plans. Proposed mitigation implementation methods shall be subject to approval by the Kern County Engineering and Survey Department. The following mitigation methods shall be implemented as required based on cost and constructability considerations: a. Avoiding susceptible areas; b. Constructing debris-flow deflection berms, debris-flow diversion channels, or a combination of both, as depicted in Figures 13a and 13b of the Preliminary Geotechnical Exploration and Summary of Geologic Constraints, Tejon Mountain Village, Kern County, California (Appendix G-1); c. Constructing properly engineered debris-flow deflection walls; d. Removing source area deposits determined to be prone to debris-flow failures; and e. Scaling slopes to remove loose and unstable rocks, bolting rock faces, or designing catchment benches, berms, or engineered fences.	Prior to approval of the TTMs or Commercial Site Development Plans and prior to the issuance of grading permits	Developer and Kern County Engineering & Survey Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-21 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to approval of a TTM or Commercial Site Development Plan and grading plans, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

#151 **4.6-4**	**MM 4.6-22:** Prior to issuance of grading permits, detailed project-specific mitigation measures shall be developed based on design-level geotechnical reports. Prior to issuance of building permits, building plans shall be prepared and submitted to the Kern County Building Department for review and approval. Plans will show that all structures within the project site have been designed, and will be constructed, with appropriate consideration of site-specific soil conditions. Mitigation methods shall be implemented by the applicant at the time of final design of improvements for subdivision tracts or custom lots. Plans for improvements will be subject to approval by the Kern County Engineering and Survey Department. Mitigation methods for areas in which more highly plastic and expansive soils occur may include: a. Observation of construction excavations by the geotechnical engineer of record to identify expansive soil deposits encountered during construction; b. Excavation of expansive soil and replacement with non-expansive fill material; c. Moisture conditioning of the expansive soils to a high moisture content; d. Capping expansive soils with non-expansive fill; and e. Placing support structures on foundations that are appropriately designed for expansive soil conditions, such as post-tensioned slabs, heavy structural mats, or pier-and-grade-beam foundations.	Prior to issuing grading permits	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-22 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to issuance of a grading permit, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

#152 **4.6-4**	**MM 4.6-23:** Graded slopes constructed for the project shall be engineered to comply with the standard of care for residential construction. Slope stability analyses shall be performed as part of the design-level geotechnical report based on the proposed grading depicted on the final maps. Recommended geotechnical mitigation methods shall be depicted on plans prepared by the geotechnical engineer of record or on plan sheets included with the final grading plans. Proposed engineering and design methods shall be subject to approval by the Kern County Engineering and Survey Department. The following mitigation methods shall be implemented as required based on cost and constructability considerations: a. Graded slopes shall be inclined no steeper than 2:1 (horizontal to vertical) unless special engineering measures, such as geogrid reinforcement, are employed; b. Critical slopes shall be designed in accordance with the standard of care used in residential construction in Kern County which typically requires a minimum factor of safety of 1.5 for static conditions and 1.1 for seismic loading conditions; c. Nonstructural slopes in nonhabitable portions of parks and recreational areas, on golf courses, and along secondary circulation roads and emergency vehicle access roads shall be designed to a level of seismic stability that will not affect basic functionality or threaten life and safety; d. Cut slopes with identified potentially adverse geotechnical conditions shall be stabilized by construction of drained, engineered fill buttresses; local flattening of cut-slope inclinations; or incorporation of earth-retention measures, such as structural walls (soil nail walls or tied-back reinforced concrete structures) or mechanically stabilized earth buttresses; and e. Fill slopes shall be designed with shear keys, benching into supporting materials, and subsurface drainage judged to be appropriate to provide adequate post-construction stability.	Prior to issuing grading permits	Kern County Engineering and Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-23 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval and prior to issuance of building permits. D. Prior to issuance of grading permits, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

#153 **4.6-4**	**MM 4.6-24:** All grading and construction on site will be in compliance with the requirements of the California Building Code Standards as adopted by Kern County, Kern County Grading Ordinance and will adhere to all specifications, procedures and site conditions presented in the reports to this Final EIR. All grading plans and geotechnical reports must be submitted to the Kern County Engineering and Survey Services Department for review and approval prior to implementation. All grading and construction and any changes to the recommendations that result from or occur during grading in these reports will be reviewed by a qualified special inspector whose selection is approved by the Kern County Engineering and Survey Services Department and whose duties and responsibilities are outlined in Chapter 17 of the California Building Code. The special inspector will verify all grading operations are in accordance with the approved grading plan, the geotechnical investigation, and recognized principles and practices. The developer's engineer of record for the grading, the geotechnical engineer, and the special inspector will provide site investigative reports for various phases of the engineered grading for review by the Kern County Engineering and Survey Services Department. Timing and frequency of the submittal of these reports will be based on a schedule approved by the Kern County Engineering and Survey Services Department before grading activities begin. Any changes to the duties of the special inspector shall be approved by the Kern County Engineering and Survey Services Department. The developer will be responsible for all costs of the special inspector and county staff for review and approval of ongoing engineered grading activities, including review of the required reports**.** The following construction methods shall be implemented by the applicant during construction:	Prior to issuance of grading permits	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-24 as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to issuance of a grading permit, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Engineering & Survey Services Department. E. The Kern County Planning Department will verify documentation prior to approval.			

	a. Fills shall be properly moisture-conditioned and compacted in accordance with the design-level geotechnical report (Mitigation Measure 4.6-2) and the recommendations of the geotechnical engineer of record in the field. Fill construction shall be observed and tested by the geotechnical engineer of record. The records of engineering testing and observation shall be supplied to the party responsible for long-term maintenance of the proposed project and Kern County; b. Subsurface drainage shall be constructed in accordance with the corrective grading plans and the recommendations of the geotechnical engineer of record in the field. The elevations and locations of subsurface drain systems and their outfall points shall be surveyed in the field during construction and compiled on an as-constructed subdrain map. The as-constructed subdrain map shall be supplied to the party responsible for long-term maintenance of the project and Kern County; c. The geotechnical engineer of record, subject to review by the special inspector, shall observe all mass-grading excavations, including cut slopes, pad and roadway cuts, corrective grading removals, shear keys, and landslide repairs, and make appropriate field recommendations to the owner based on revealed conditions; and d. Geologic conditions exposed in construction excavations shall be mapped in the field by the geotechnical engineer of record and compiled on a field-verified geology map. The field-verified geology map shall be supplied to the party responsible for long-term maintenance of the project and Kern County.	

#154 **4.6-5**	**MM 4.6-25:** Prior to issuance of a grading permit, the applicant shall retain a qualified erosion control consultant to prepare a Stormwater Pollution Prevention Plan, including a site-specific Erosion Control Plan, depicting appropriate best management practices, as well as a post-construction stormwater management plan designed to limit soil erosion based on the site's soil conditions and the proposed grading plan. The plan shall be submitted to Kern County Engineering and Survey Services Department for review and approval. The Stormwater Pollution Prevention Plan, Erosion Control Plan, and post-construction stormwater management plan shall conform to federal, state, and Kern County requirements. Implementation of the Stormwater Pollution Prevention Plan, Erosion Control Plan, and post-construction stormwater management plan will be subject to inspection by Kern County personnel. The applicant will be responsible for Stormwater Pollution Prevention Plan, Erosion Control Plan, and post-construction stormwater management plan implementation during and following construction.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of a grading permit, applicant will submit to the Building Inspection Department a Stormwater Pollution Prevention Plan, including a site-specific Erosion Control Plan prepared by a qualified erosion control consultant. C. The Kern County Planning Department will verify documentation prior to approval.			

#155 **4.6-5**	**MM 4.6-26:** Prior to the approval of tentative tract maps or the development of the commercial areas, the applicant shall formulate an appropriate long-term maintenance plan to address post-construction maintenance issues that are typically encountered in hillside development projects. The applicant shall designate an appropriately funded entity, such as a benefit district or Geologic Hazard Abatement District (GHAD), to administer long-term maintenance. The maintenance entity shall designate appropriate qualified consultants and contractors to perform periodic inspections of slopes and drainage facilities. The designated consultants and contractors shall be retained on an on-call basis to allow timely response to maintenance issues as they occur. The long-term maintenance budget shall be prepared by a geotechnical engineer.	Prior to approval of TTMs or Commercial Site Development Plans	Kern County Building Inspection; Planning Department; TMV Design Review and Approval Committee; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.6-26 will be included as a note in all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to approval of a TTM or Commercial Site Development Plan, applicant will provide evidence to Kern County Planning Department that a long-term maintenance plan and an appropriately funded entity has been established to administer long-term maintenance of hillside areas.			

#156 **4.6-8**	**MM 4.6-27:** The following requirements shall be implemented through the implementation of the Tejon Mountain Village Special Plan No. 1, Map 256: a. All development shall be connected to public sewer or Septic Tank Effluent Pumping (STEP) system as approved by Tejon Castac Water District.	Prior to approval of sewer improvement plans (for commercial development) and Prior to issuance of certificates of occupancy (for septic systems)	Kern County Building Inspection Department; Kern County Environmental Health Services Department; TMV Design Review and Approval Committee; Tejon Castac Water District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of commercial sewer improvement plans by Kern County Building Inspection Department, applicant will provide evidence that lines are connected to a public sewer. C. Prior to approval of temporary septic systems, plans will be reviewed and approved by the Kern County Environmental Health Services Department.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.7 Hazards and Hazardous Materials					
#157 **4.7-2**	**MM 4.7-1**: Prior to the issuance of any grading permit, the project proponent shall indicate whether blasting will be required. If blasting is required during grading, the contractor shall prepare a blasting safety plan that describes implementation and safety measures during any blasting activities. The blasting safety plan shall be submitted to the Kern County Fire Department for review and approval prior to the issuance of any grading permit. Additionally, if blasting is required, the project proponent shall not transport, store, or use any explosives on site until such time as the grading permit is issued. The blasting safety plan shall include the following components: a. Description of explosive materials to be used on the site, b. Schedule of blasting activities, c. Provisions for onsite storage and security arrangements (if onsite storage is required), d. Contact information for residents and/or property owners within 1,000 feet of the blasting site boundaries, e. Description of pre-blasting notification procedures, and f. List of emergency contact numbers If blasting is required, the construction contractor shall provide advance notification of blasting activities to all property owners and residents located within 1,000 feet of the blasting site boundaries and to the Kern County Fire Department. Blasting materials shall be stored in a suitable locked container that meets California Fire Code requirements. In addition, if blasting is required during project construction activities within 200 feet of a natural gas pipeline, the utility owning the pipeline shall be notified and consulted to coordinate appropriate safety procedures to assure that this construction activity will not cause a pipeline rupture risk.	Prior to issuance of grading permits	Kern County Building Inspection Department; Kern County Planning Department; Kern County Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-1 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to issuance of a grading permit, applicant will submit a geotechnical report prepared by a qualified geologic/geotechnical consultant to Kern County Building Inspection Department D. If blasting is anticipated, applicant will submit a blasting safety plan to Kern County Fire Department for review and approval. E. The Kern County Planning Department will verify documentation prior to approval. F. The Building Inspector will verify compliance in the field prior to and during the construction period.			

#158 **4.7-4**	**MM 4.7-2:** Prior to initiating construction or soil disturbance activities, a soil management plan shall be provided to construction contractors that summarizes applicable legal requirements regarding the discovery, reporting, management, and disposal of hazardous materials or hazardous wastes. Contractors will also be obligated to comply with applicable legal requirements.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-2 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to approval of a grading permit, applicant will provide evidence to Kern County Building Inspection Department that a soil management plan has been prepared. D. The Kern County Planning Department will verify documentation prior to approval.			

#159 **4.7-4**	**MM 4.7-3:** Development located immediately adjacent to the existing easements for the underground crude oil pipelines and gas pipelines at Tejon Mountain Village will require coordination between the contractors and the easement holders for crude oil and gas pipelines to address any safety issues and to monitor construction to ensure that pipelines are avoided during construction activities. If any abandoned or unrecorded wells are discovered during excavation or grading activities, the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) will be contacted immediately, and all excavation and/or grading activities will cease until such time as remedial plugging operations can be performed in accordance with DOGGR requirements.	Prior to issuance of a grading permit	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-3 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to issuance of grading permits, applicant shall provide evidence to Kern County Building Inspection Department that grading plans include construction notes indicating that contractors will coordinate directly with the easement holders of crude oil and gas pipelines to address any safety issues. D. The Kern County Planning Department will verify documentation prior to approval.			

#160 **4.7-4**	**MM 4.7-4:** Prior to grading, existing transformers on the Tejon Mountain Village site shall be inspected. Transformers that are leaking or deteriorated that contain polychlorinated biphenyls shall be replaced with newer models that do not contain PCBs. Any replaced transformers containing polychlorinated biphenyls shall be disposed of through a commercially permitted polychlorinated biphenyls disposal company, as identified by the U.S. Environmental Protection Agency.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of grading permits, applicant shall provide evidence to Kern County Building Inspection Department that (1) a hazardous materials consultant or its designated remediation contractor has inspected existing transformers on the Tejon Mountain Village site; (2) all transformers that are leaking or deteriorating will be replaced by a hazardous materials consultant or designated remediation contractor with newer models that do not contain PCBs; and (3) PCBs will be disposed of by a PCB disposal company as identified by U.S. EPA.			

#161 **4.7-4**	**MM 4.7-5:** Prior to construction in the vicinity of the target areas at the Venado Hunting Lodge, the upper 3 to 6 inches of soil with lead concentrations exceeding the California Human Health Screening Level value of 150 milligrams per kilogram (VL16, VL17, VL18, and VL25, as identified in the Supplemental Investigation Report for the Venado Hunting Lodge, Appendix H-7) shall be excavated, profiled, and disposed of in accordance with applicable regulations, under the direction of a qualified remediation engineer. Excavation confirmation sampling shall be conducted to confirm that remaining lead concentrations are less than the residential California Human Health Screening Level value of 150 milligrams per kilogram. This and any further required remediation activity shall be completed under the oversight of an appropriate remediation agency.	Prior to issuance of grading permits at the Venado Hunting Lodge	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of grading permits in the vicinity of the target area at the Venado hunting Lodge, applicant will provide evidence to Kern County Building Inspection Department that : (1) a qualified remediation engineer will remove the upper 3 to 6 inches of soil with lead concentrates exceeding California Health Screening Levels and (2) any contaminated soil will be excavated, profiled, and disposed of in accordance with applicable regulations under the direction of a qualified remediation engineer and with the oversight of an appropriate remediation agency. C. The Kern County Planning Department will verify documentation prior to approval.			

#162 **4.7-4**	**MM 4.7-6:** Lead shot and lead bullets shall not be used for target practice at the Venado Hunting Lodge or elsewhere at the project site.	Prior to issuance of certificates of residential occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-6 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to issuance of certificates of residential occupancy, the applicant will submit evidence to Kern County Building Inspection department that the use of lead ammunition is not permitted on the property. D. The Kern County Planning Department will verify documentation prior to approval.			

#163 **4.7-4**	**MM 4.7-7:** The project shall not construct any residential development within 500 feet of Interstate 5. Excavated soil from nonresidential construction activities within 500 feet of Interstate 5 with elevated lead levels shall be stockpiled and tested for appropriate reuse or offsite disposal in accordance with applicable laws.	Prior to approval of a TTM (for residential units adjacent to I-5) and issuance of a grading permit (for non-residential construction adjacent to I-5)	Kern County Building Inspection; Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-7 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to approval of any TTM that includes residential units adjacent to I-5, applicant will demonstrate to Building Inspectionthe Kern County Planning Department that no residential development will be constructed within 500 feet of Interstate 5. D. Prior to the issuance of a grading permit for non-residential construction adjacent to I-5, applicant will provide evidence to Kern County Planning Department that grading improvement plans include construction notes requiring soil excavated within 500 feet of Interstate 5 will be stockpiled and tested for appropriate reuse or offsite disposal.			

#164 **4.7-4**	**MM 4.7-8:** Prior to the initiation of any construction within 500 feet of the Old Post Office on the west side of Interstate 5 (sample location I5-042 identified in Appendix H-7), additional sampling shall be conducted. Appropriate measures shall be implemented to assure the safe handling and disposition of any impacted soils and that the remaining soils are safe for the intended uses to be constructed at the site.	Prior to issuance of a grading permit adjacent to the Old Post Office	Kern County Building Inspection; Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-8 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to the issuance of a grading permit for construction adjacent to the Old Post Office on the west side of I-5, applicant will provide evidence to Kern County Building Inspection Department that grading improvement plans include construction notes requiring: (1) additional soil sampling; (2) proper disposal of any impacted soil; and (3) documentation that remaining soils are safe for the intended uses to be constructed at the site. D. The Kern County Planning Department will verify documentation prior to approval.			
#165 **4.7-4**	**MM 4.7-9:** No development shall occur within 500 feet of the former Lebec Sanitary Landfill, Lebec Burn Dump No. 1, or Lebec Burn Dump No. 2.	Prior to approval of TTMs	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM, applicant will provide evidence to Kern Planning Department that no development shall occur within 500 feet of the former Lebec Sanitary Landfill, Lebec Burn Dump No. 1, or Lebec Burn Dump No. 2.			

#166 **4.7-8**	**MM 4.7-10:** Prior to approval, the Kern County Fire Department shall review each project area tentative tract map submitted for approval to the Kern County Planning Department to ensure that the map is consistent with the Fuel Modification Zone requirements set forth in the Tejon Mountain Village Fire Protection Plan and as identified by the Kern County Fire Department.	Prior to approval of TTMs	Kern County Building Inspection; Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM, Kern County Building Inspection Department will ensure that the Kern County Fire Department has reviewed each TTM to confirm the map is consistent with the Fuel Modification Zone requirements.			

#167 **4.7-8**	**MM 4.7-11:** All prospective landowners within the project site shall be provided copies of the prohibited plants list and vegetation management zone requirements and limitations as set forth in the Tejon Mountain Village Fire Protection Plan. These provisions shall be enforced by recording applicable covenants, codes, and restrictions on each private lot and by notifying each private lot owner in writing prior to the lot or other property purchase of applicable plant use prohibitions and vegetation zone management requirements.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-11 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to issuance of residential certificates of occupancy, the applicant will provide evidence to the Kern County Building Inspection Department that the CC&R's include lists of prohibited plants and vegetation management zone requirements as set forth in the Tejon Mountain Village Fire Protection Plan.			

#168 **4.7-8**	**MM 4.7-12**: All new permanent power lines shall be installed underground. Temporary power lines used during construction may be installed overhead, subject to vegetation clearing and restrictions specified in the Tejon Mountain Village Fire Protection Plan. Existing lines may be relocated aboveground with proper vegetation clearance.	Prior to approval of electrical improvement plans	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-12 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to approval of electrical improvement plans, the Kern County Planning and Building Inspection Departments will verify that all new permanent power lines will be installed under ground and temporary, above-ground power lines used during construction will be subject to vegetation clearance requirements included in the TMV Fire Protection Plan			
#169 **4.7-8**	**MM 4.7-13**: Access roads shall be designed and constructed to meet all applicable state and local fire codes as described in the Tejon Mountain Village Fire Protection Plan or include equivalent fire protection performance features upon approval by the Kern County Fire Department.	Prior to approval of grading plans	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of grading permits, the applicant will demonstrate to Kern County Planning and Building Inspection Departments that access roads are designed and constructed to meet applicable state and local fire codes as described in the Tejon Mountain Village Fire Protection Plan.			

#170 **4.7-8**	**MM 4.7-14**: Onsite structures shall be designed and constructed to meet all applicable state and local fire codes as described in the Tejon Mountain Village Fire Protection Plan.	Prior to approval of building permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of building permits, Kern County Planning and Building Inspection Departments will verify that onsite structures are designed and constructed to meet applicable state and local fire codes as described in the Tejon Mountain Village Fire Protection Plan.			
#171 **4.7-8**	**MM 4.7-15**: Onsite fire hydrant, fire flow, duration, and water storage requirements, and other onsite elements of the fire protection infrastructure shall be designed and constructed in compliance with the requirements of the Tejon Mountain Village Fire Protection Plan and as identified by the Kern County Fire Department.	Prior to approval of street improvement plans	Kern County Fire Department; Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans, Kern County Fire Department will verify that the fire protection infrastructure is designed and constructed in compliance with the requirements of the Tejon Mountain Village Fire Protection Plan.			

#172 **4.7-8**	**MM 4.7-16**: Prior to approval of the first tentative tract map, parcel map or commercial site development plan the project proponent shall prepare materials that explain the provisions of the Tejon Mountain Village Emergency Preparedness Plan for dissemination to all future project landowners and facility operators. The plan shall be incorporated into the emergency response plans maintained by each commercial or resort facility operator on the project site. Prior to issuance of the first building permit the applicant will develop a legal method for making annual financial contributions to the Kern County Fire Department/Environmental Health Services Department to support the reverse 911 calling system for all addresses (residential and commercial) within the development. The startup fee will be no more than $2.50 per address.	Prior to the issuance of building permits	Kern County Fire Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.7-16 will be incorporated as a condition of approval for any subsequent discretionary action. C. Prior to approval of the first building permit, applicant will demonstrate to Kern County Building Inspection Department that it has prepared educational materials explaining the Tejon Mountain Village Emergency Preparedness Plan and that it will disseminate the educational materials to all future project landowners and facility operators. D. Prior to approval of the first building permit, the applicant will submit to the Kern County Planning Department a plan for making annual financial contributions to support the reverse 911 calling system.			

#173 **4.7-9**	**MM 4.7-17**: Prior to issuance of a grading permit for the golf course, the project proponent shall consult with the Kern Vector Control District and incorporate measures to reduce mosquito impacts to the golf course. Written notification from the Vector Control District will be required showing that the proper measures have been included in the project design.	Prior to issuance of a grading permit (for a golf course)	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of a grading permit for a golf course, applicant will provide Kern County Building Inspection Department with evidence that it has consulted with the Kern County Vector Control District and that it has incorporated measures in the plan to reduce mosquito impacts.			

#174 **4.7-10**	**MM 4.7-18**: The California Department of Real Estate sale documents shall include a disclosure of the risks of wildlife encounters at Tejon Mountain Village. The project Property Owner Association or similar entities shall post warnings regarding wildlife contact risks at community facilities and shall include such information in invoices for association dues at least annually. All guests of hotels on the project site shall receive a brochure upon check-in discussing the risks of wildlife encounters. Trails maps, trailhead entrance signs, Property Owner Association and similar association websites, hotel websites, and other websites associated with the proposed project shall also include warnings regarding the risks of wildlife encounters. The warnings will provide information regarding behaviors that will avoid encounters with wildlife, how to respond in the event of contact, and the risk of an attack based on California Department of Fish and Game publications, including the following: a. Do not hike, bike, ride, or jog alone. b. Avoid hiking, biking, riding, or jogging at dawn, dusk, and night. c. When hiking, biking, riding, or jogging, make noise to avoid surprising a wild animal. d. Do not go barefoot or wear sandals when hiking on trails; wear hiking boots to protect from rattlesnake bites. e. Do not leave trails, and especially avoid tall grass, weeds, and heavy underbrush where snakes like to hide during the day. f. Do not step or put hands or feet in places not visible. Be especially careful when climbing on rocks. Check out stumps or logs before sitting down. g. If bitten by a rattlesnake, stay calm. Wash the bite area gently with soap and water. Remove watches, rings, etc., which can constrict swelling. Immobilize the affected area. Transport the victim safely and quickly to the nearest medical facility. If this is more than 30 minutes away, keep the bite below the heart. h. Keep close watch of small children.	Prior to the first residential or resort certificate of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee: TMV Master Developer/Master Property Owners Association		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of the first residential certificate of occupancy, applicant will provide evidence to the Kern County Building Inspection Department that: (1) the California Department of Real Estate sale documents include a disclosure of the risks of wildlife encounters; (2) the landscape plans at major trails heads include signage warning residents of the risks of wildlife contact and (3) the CC&R's include a requirement that the Property Association will include such information in invoices for association dues at least annually. C. Prior to issuance of certificates of occupancy for any lodging, the applicant will provide evidence to the Kern County Building Inspection Department that (1) the building plans for resort facilities include signage warning hotel guests of wildlife contact risks and (2) the hotels will provide all guests a brochure upon check-in regarding the risks of wildlife encounters D. The Kern County Planning Department will verify documentation prior to issuance of certificate of occupancy.			

	i. Do not approach wild animals, especially wild pigs, black bears, mountain lions, or any animal with injuries or with young. j. If a black bear or mountain lion is encountered, do not run. Instead, face the animal, make noise, and try to look bigger by waving your arms. Throw rocks or other objects. Pick up small children. k. If attacked by a black bear or mountain lion, fight back. l. If an attack by a black bear or mountain lion occurs, call 911. m. If wild pigs are encountered, make sure they have an escape route and then yell, wave your arms, and jump up and down. n. Do not attempt to feed or tame a wild animal. This includes deer, because they attract mountain lions. o. Store garbage in bear-proof containers or in an enclosed building. p. Keep food indoors or in airtight and odor-free containers. q. Put away leftovers from outside and clean barbeque grills. r. Keep pet food inside. s. Pick up fallen tree fruit as soon as possible, or protect fruit trees with electric fencing. t. Deer-proof landscaping by avoiding plants that deer like to eat. u. Trim bushes to reduce hiding places for mountain lions. v. Install fine plastic mesh (bird netting) low to the ground (2 to 4 inches above the soil) to provide a foot-tangling barrier to wild pigs. w. Control grubs in lawns, preferably with beneficial nematodes or soapy water. x. Report any black bear, mountain lion, or wild pig sightings in residential yards to the project biologist. y. Do not leave children or pets outside unattended. Do not allow pets outside when mountain lions are most active, at dawn, dusk, and night. z. Install motion-sensitive lighting around the exterior of residences, as allowed by the Tejon Mountain Village Design Guidelines.	

#175 **4.7-10**	**MM 4.7-19**: All outdoor residential and commercial trash containers shall be covered containers that are fitted with animal- and weather-proof lids.	Prior to issuance of residential and commercial certificates of occupancy	Kern County Building Inspection Department; Kern County Planning Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of residential or commercial certificates of occupancy, applicant will provide evidence to Kern County Building Inspection Department that the residential CC&R's and commercial center include requirements that all trash containers include animal and weather proof lids.			
Justification: Impact 4.7-10 is considered significant and unavoidable. All feasible and reasonable changes or alterations have been required in, or incorporated into, the proposed Project that substantially lessen the potentially significant effect as identified in the Final EIR. All other potentially significant impacts to Hazards and Hazardous Materials are less than significant.					

4.8 Hydrology and Water Quality					
#176 **4.8-1**	**MM 4.8-1:** Prior to the initiation of construction activity that qualifies for coverage under the California General Construction Permit, the project shall comply with applicable permit coverage and notice requirements and construction-period management requirements, including the preparation and implementation of a stormwater pollution prevention plan (SWPPP) and the identification of erosion and sediment control options that meet applicable best available technology economically achievable and best conventional pollutant control technology (BAT/BCT) standards.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process B. Prior to issuance of a grading permit, applicant Building Inspection will have a Stormwater Pollution Prevention Plan prepared and will provide a copy to Kern County Engineering and Survey Services Department and the Regional Water Quality Control Board for review and comment. C. Kern County Planning Department will verify the approved National Pollutant Discharge Elimination System General Construction Permit, Stormwater Pollution Prevention Plan and Best Management Practices prior to issuing building or grading permits. Kern County Engineering and Survey Services Department will verify in the field adherence to the Stormwater Pollution Prevention Plan and the Best Management Practices during the construction period.			

#177 **4.8-1**	**MM 4.8-2:** During all phases of project construction, the project shall implement erosion control, including a) physical soil stabilization using hydraulic mulch, soil binders, straw mulch, bonded fiber matrices, and erosion control blankets as appropriate; b) limiting the area and duration of exposure of disturbed soils to the extent feasible; c) soil roughening of graded areas through track walking, scarifying, sheepsfoot rolling, or imprinting; d) vegetation stabilization through temporary seeding; and e) applying water or other dust controls.	Prior to issuance of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process B. MM 4.8-2 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to issuance of a grading permit, applicant shall provide evidence to Kern County Building Inspection Department that it has prepared an erosion and sediment control plan. E. The Kern County Planning Department will verify documentation prior to issuance of grading permits.			

#178 **4.8-1**	**MM 4.8-3:** During all phases of project construction, the project shall implement sediment control measures as appropriate, including a) perimeter protection using silt fences, fiber rolls, gravel bag berms, sand bag barriers, or straw bale barriers, including the protection of environmentally sensitive areas; b) storm drain inlet protection; c) sediment capture using sediment traps, storm drain inlet protection, or sediment basins; d) velocity reduction using check dams, sediment basins, outlet protection, or velocity dissipation devices; and e) off-site sediment tracking controls using stabilized construction entrances and exits, construction road stabilization, or entrance and exit tire wash facilities.	Prior to issuance of a grading permit	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process B. MM 4.8-3 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to issuance of a grading permit, applicant shall provide evidence to Kern County Building Inspection Department that it has prepared an erosion and sediment control plan. E. The Kern County Planning Department will verify documentation prior to issuance of grading permits.			

#179 **4.8-1**	**MM 4.8-4:** During all phases of project construction, the project shall implement waste and materials management measures, including measures to a) avoid releases and control solid, sanitary, concrete, hazardous, and equipment-related wastes and b) protect soil stockpiles using covers, water or soil binders, or perimeter control measures.	Prior to issuance of grading, street improvement or building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of grading, street improvement or building permits, applicant will provide evidence that construction plans include notes summarizing waste and materials management measures. D. The Department of Building Inspection will verify that these measures are implemented in the field.			

#180 **4.8-1**	**MM 4.8-5:** During all phases of project construction, the project shall implement non-stormwater management measures to reduce or limit stormwater exposure to pollutants, including a) water conservation practices; b) vehicle and equipment cleaning; and c) vehicle fueling practices that avoid and control pollutant discharges.	Prior to issuance of grading, street improvement or building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of grading, street improvement or building permits, applicant will provide evidence to Kern County Building Inspection that construction plans include notes summarizing non-storm water pollution control measures. D. The Department of Building Inspection will verify that these measures are implemented in the field.			

#181 **4.8-1**	**MM 4.8-6:** During all phases of project construction, the project shall implement training and education measures, including a) training individuals who are responsible for storm water pollution protection program preparation, implementation, and compliance, including construction contractors and subcontractors; b) providing signage that identifies storm water pollution protection program management requirements, such as site cleanup policies and designated washout locations; and c) disseminating construction-period water quality management measures and requirements to custom lot contractors prior to construction.	Prior to issuance of grading, street improvement or building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of grading, street improvement or building permits, applicant will provide evidence to Kern County Engineering &Survey Services Department that a SWPPP has been prepared. C. The Department of Building Inspection will verify that these measures are implemented in the field.			

#182 **4.8-1**	**MM 4.8-7:** During all phases of project construction, the project shall conduct maintenance, monitoring, and inspections as required to ensure compliance with construction-period water quality control measures, including a) regular site inspections and inspections before, during (for storm events greater than 24 hours in duration), and after storm events; b) maintenance and repair of mitigation measures as required; and c) preparation and implementation of a sampling and analysis plan for non-visible pollutants of concern.	Prior to issuance of grading, street improvement or building permits	Kern County Planning Department; Kern County Engineering & Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of grading, street improvement or building permits, applicant will provide evidence to Kern County Engineering &Survey Services Department that a SWPPP has been prepared. D. The Department of Building Inspection will verify that these measures are implemented in the field.			

#183 **4.8-1**	**MM 4.8-8:** During all phases of project construction, the project shall develop and implement a dry- and wet-weather control measure plan that will include the following provisions: a) dry-weather controls, including dust control, soil roughening of graded areas, sediment control measures at the down-gradient site perimeter and all operational storm drain inlets internal to the site, soil tracking mitigation, waste management and materials pollution control measures, nonstormwater measures to prevent or reduce stormwater contact with construction materials, and an action plan to deploy additional erosion and sediment controls as may be required within 48 hours of a predicted storm event and b) wet-weather controls, including limiting the area and duration of exposure of disturbed soil areas, erosion and sediment control measures for disturbed areas, and maintaining sufficient on-site materials to implement additional erosion and sediment controls within 48 hours of a predicted storm event.	Prior to issuance of grading, street improvement or building permits	Kern County Planning Department; Kern County Engineering & Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of grading, street improvement or building permits, applicant will provide evidence to Kern County Engineering &Survey Services Department that a SWPPP and erosion and sediment control plans have been prepared. The Department of Building Inspection will verify that these measures are implemented in the field.			

#184 **4.8-1**	**MM 4.8-9:** All areas of the project that include a standard curb and gutter system shall stencil a statement or graphical icon above publicly accessible storm drain system inlets that prohibits dumping improper wastes into the storm drain system. Inserts shall be installed as required to collect trash from storm drain inlets in high-use areas of the site that include a standard curb and gutter system.	Prior to approval of street improvement plans	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans, applicant shall provide evidence to Kern County Building Inspection Department that standard curb and gutter systems include a stenciled statement or graphical icon above publicly accessible storm drain inlets prohibiting dumping of improper dumping and requiring inlet trash inserts.			

#185 **4.8-1**	**MM 4.8-10:** Maintenance inspection of common area treatment controls shall be conducted by the project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District or other government agency with treatment control management responsibilities, as identified and approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department, at least once a year. Appropriate records of the inspection shall be maintained by the responsible entity. Common area treatment control maintenance responsibilities and obligations shall be included in the conditions, covenants, and restrictions (CC&Rs), or similar restrictions, applicable to all private residences, commercial areas, or other privately owned or managed facilities within the project.	Prior to approval of a TTM or Commercial Site Development Permit and issuance of residential or commercial certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM or Commercial Site Development Plan, applicant will provide evidence to Kern County Planning Department that a long-term maintenance plan and an appropriately funded entity has been established with treatment control management responsibilities C. Prior to approval of residential or commercial certificates of occupancy, applicant will provide evidence to Kern County Building Inspection Department that the CC&R's and commercial management plans include requirements for common area water quality treatment control measures.			

#186 **4.8-1**	**MM 4.8-11:** Outdoor material storage areas shall include the following requirements: a) materials with the potential to contaminate stormwater shall be placed in an enclosure such as a shed or cabinet or protected by secondary containment structures such as berms, dikes, or curbs; b) permanent storage areas shall be paved with impervious materials; and c) permanent storage areas shall have a roof or awning.	Prior to issuance of building permits for the maintenance structures	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of building permits for maintenance structures, the applicant shall provide evidence to Kern County Building Inspection Department of implementation of outdoor material storage requirements. D. The Building Inspection Department will verify compliance in the field.			

#187 **4.8-1**	**MM 4.8-12:** Potential pollutant source areas shall include the following requirements: a) trash storage areas shall be designed to prevent the transport of trash and debris by wind or water into nearby storm drain inlets and receiving waters; b) loading docks shall be designed to reduce the risk that spilled materials may enter the storm drain system; c) on-site vehicle repair and maintenance bays shall be designed to control potential discharges of metals, oil and grease, solvents, battery acid, coolant, and fuels to the storm drain system; d) on-site vehicle or equipment and restaurant equipment or accessory wash areas shall be designed to control discharges of metals, oil and grease, solvents, phosphates, and suspended solids to the storm drain system; e) on-site fueling areas shall be designed to control the discharge of oil and grease, solvents, car battery acid, coolant, and fuels to the storm drain system; f) parking areas shall be designed to control discharges of heavy metals, oil and grease, PAHs, and suspended solids to the storm drain system; and g) heavily used parking lots shall include treatment measures to remove oil and petroleum hydrocarbons from parking lot runoff, including regular maintenance to prevent system fouling and plugging, if required.	Prior to issuance of commercial building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. A. Prior to issuance of commercial building permits, the applicant shall provide evidence to Kern County Building Inspection Department that the building plans include the appropriate pollution control requirements B. The Building Inspection Department will verify compliance in the field.			

#188 **4.8-1**	**MM 4.8-13:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency with water quality facility management and compliance responsibilities, as approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department, shall develop and provide environmental awareness education materials to all project residents and employees that include the following information: a) household and other chemicals that should not be discharged from use locations, including discharge via hosing or other direct discharge to gutters, catch basins, and storm drains; b) the proper handling of fertilizers, pesticides, cleaning solutions, paint products, automotive products, trash and debris, and swimming pool chemicals; c) the environmental and legal impacts of illegal or harmful discharges into storm drains and sewers; d) alternative household products that reduce environmental impacts; e) household hazardous waste collection programs; f) used oil recycling programs; f) proper procedures for spill prevention and cleanup; g) proper storage of materials that pose pollution risks to local waters; h) public or private transportation alternatives; i) approved car washing facilities and locations in multi-unit residential areas; and j) proper management of pet wastes, including the use of disposal bins in high-use common areas, and the avoidance of feeding waterfowl, particularly near water bodies.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department Kern County; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of residential certificates of occupancy, applicant provide evidence to Kern County Building Inspection Department that the CC&Rs include a requirement that water quality and environmental awareness educational materials are prepared and distributed to residents.			

#189 **4.8-1**	**MM 4.8-14:** The project's conditions, covenants, and restrictions (CC&Rs) applicable to all private residences, commercial areas, and recreational areas, or other use restrictions that may be developed by a building operator through lease terms or other mechanisms applicable to privately owned or leased facilities within the project, shall include constituent use and discharge provisions as may be required for the purpose of water quality protection, including prohibitions on the use of illegal materials or pesticides or vehicle and equipment washing outside established community wash areas in multi-unit residential or commercial areas.	Prior to issuance of residential or commercial certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of residential or commercial certificates of occupancy, applicant will provide evidence to Kern County Building Inspection Department that the CC&Rs and commercial center management documents include water quality protection measures. D. The Kern County Planning Department will verify documentation prior to issuance of certificates of occupancy.			

#190 **4.8-1**	**MM 4.8-15:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency with water quality facility management and compliance responsibilities, as approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department, shall conduct regular litter patrols and shall regularly empty trash receptacles in common areas to prevent trash spillage or overflow.	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of residential certificates of occupancy, applicant will provide evidence to Kern County Building Inspection Department that the CC&Rs include requirements for regular litter control measures. D. The Kern County Planning Department will verify documentation prior to issuance of certificates of occupancy.			

#191 **4.8-1**	**MM 4.8-16:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency with water quality facility management and compliance responsibilities, as approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department and Engineering and Survey Services Department, shall ensure that common area and private streets and parking lots in high-use areas are swept prior to the onset of the first storm of the rainy season each year.	Prior to the approval of residential and commercial certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of residential and commercial certificates of occupancy, applicant will provide evidence to Kern County Building Inspection Department that the CC&Rs or commercial area management documents include requirements that common area and private streets and parking lots in high-use areas are swept prior to the onset of the first storm of the rainy season each year.			

#192 **4.8-1**	**MM 4.8-17:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency with water quality facility management and compliance responsibilities, as approved by Kern County Administrative Office, in consultation with the Kern County Planning Department, shall develop and implement a landscape management plan for common area landscaping within the project that includes integrated pest management (IPM) and pesticide and fertilizer application guidelines. The landscape management plan shall include the following elements: a) pesticide applicator certification, license, and training requirements, including the requirement that all pesticide applicators be certified by the California Department of Pesticide Regulation; b) pest identification; c) appropriate practices to prevent or reduce pest incidence and buildup; d) monitoring to examine vegetation and surrounding areas for pests to evaluate trends and to identify when controls are needed; e) establishment of action thresholds that trigger control actions; f) cultural, mechanical, environmental, biological, and pesticide use control measures; g) pesticide management requirements, such as material Safety Data Sheets, precautionary statements, and protective equipment, regulatory requirements, and spill and groundwater and surface water protection measures associated with pesticide use; and h) fertilizer management recommendations, including soil assessment, fertilizer types, application methods, and storage and handling requirements.	Prior to approval of common area landscape improvement plans	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of common area landscape plans, the applicant will demonstrate to Kern County Building Inspection Department that an Integrated Pest management Plan has been prepared and is referenced on the landscape improvement documents. D. Kern County Planning Department will verify documentation prior to approval.			

#193 **4.8-1**	**MM 4.8-18:** All on-site landscape materials, including plants used in vegetated hydromodification or treatment control mitigation areas, such as swales, bioretention areas, and basins, shall be selected from the approved plant palette list of indigenous, drought-tolerant plants with low irrigation, pesticide, and fertilizer application requirements identified in Section D.3 of the Tejon Mountain Village Specific Plan Master Design Guidelines.	Prior to approval of common area landscape improvement plans	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of common area landscape plans, the applicant will demonstrate to Kern County Building Inspection Department that all on-site landscape materials shall be selected from the approved plant palette identified in Section D.3 of the Tejon Mountain Village Specific Plan Master Design Guidelines. D. Kern County Building Inspection Department will verify compliance in the field.			

#194 **4.8-1**	**MM 4.8-19:** All on-site irrigation systems shall use low-precipitation sprinkler heads, bubblers, drip irrigation, and automatic timing devices as identified in Section D.2.II.iv of the Tejon Mountain Village Specific Plan Master Design Guidelines.	Prior to approval of common area landscape improvement plans	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of common area landscape plans, the applicant will demonstrate to Kern County Building Inspection Department that all on-site irrigation systems are designed according to specification identified in Section D.2.II.iv of the Tejon Mountain Village Specific Plan Master Design Guidelines. D. The Building Inspection Department will verify compliance in the field.			

#195 **4.8-1**	**MM 4.8-20:** Equestrian areas shall include the following source controls: a) potential runoff from water troughs shall be controlled with automatic watering systems or other means; b) pastures and other equestrian use areas shall be managed to prevent heavy grazing, and a buffer strip of vegetation downslope of paddocks, turnouts, and other bare areas shall be maintained; c) manure stockpiles shall be isolated from rainfall and stormwater runoff by the use of covers, berms, or similar measures; d) manure shall be disposed of in a timely manner in active solar dryers (solar greenhouses) used to dry and stabilize on-site waste solids; e) paddocks shall include a gravel or sand bottom; and f) horse wash area discharges shall be routed to septic tank effluent pumping (STEP) systems and discharged to the sanitary sewer system.	Prior to issuance of certificates of occupancy in the equestrian center	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of certificates of occupancy in the equestrian center, the applicant will demonstrate to Kern County Building Inspection Department that the CC&Rs include equestrian area source control measures. D. The Building Inspection Department will verify compliance in the field.			

#196 **4.8-1**	**MM 4.8-21:** All golf course areas shall implement the following requirements: a) natural vegetation areas shall be preserved to the extent possible for roughs and managed buffers; b) buffers and setbacks shall be maintained between intensively managed areas of the golf course and natural watercourses; c) native, drought-tolerant vegetation shall be incorporated into managed buffers and landscaped areas; d) the extent of impervious surfaces shall be reduced by limiting use of decorative concrete and similar means; e) walking and golf cart path widths shall be constructed with the minimum width necessary or walkways, overflow parking lots, and other low traffic areas shall use open-jointed paving materials or permeable surfaces such as pervious concrete, porous asphalt, unit pavers, and granular materials; f) impervious areas shall be disconnected to the extent possible by designing runoff from cart paths, walkways, trails, roads, and parking lots to disperse to swales, bioretention areas, or other landscaped areas or impervious areas shall use open-jointed permeable materials; g) runoff from fairways and roughs shall be captured within turfed areas and infiltrated or dispersed to swales, bioretention areas, or other landscaped areas; h) greens shall be constructed with a layered soil profile that allows water to infiltrate to the root zone; i) green underdrains separated from the water table shall be installed to capture irrigation water that infiltrates past the root zone, or to reduce root zone saturation, and to route collected water to vegetated areas or to local reservoirs for reuse; j) surface and underdrain runoff from tees shall drain to bioretention areas or swales; k) turf shall be selected to reduce irrigation, pesticide, and fertilizer requirements and to improve resistance to diseases; and l) irrigation systems shall apply water at a rate that does not exceed infiltration rates, shall include "smart" controllers that predict irrigation frequency based on vegetation evapotranspiration, and shall have automatic timers to avoid over-irrigation.	Prior to approval of the golf course grading and landscape permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit a golf course maintenance plan to the Kern County Planning Department. C. Prior to approval of the golf course grading and landscape permits, the applicant shall demonstrate to Kern County Planning and Building Inspection Departments that the construction documents include water quality protection measures.			

#197 **4.8-1**	**MM 4.8-22:** All golf course areas of the site shall develop and implement a spill prevention and control plan to ensure that chemicals and fuels are safely stored, including a) stockpiling spill cleanup materials and notifying responsible agencies in the event a spill occurs; b) disposing of cleanup materials; and c) providing requirements for storing stockpiled materials, such as sand, divot repair components, and green waste.	Prior to issuance of certificates of occupancy for the golf course maintenance facility	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit a golf course maintenance plan to the Kern County Planning Department. C. Prior to issuance of certificates of occupancy for the golf course maintenance facility, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared a spill prevention and control plan. D. The Building Inspection Department will verify compliance in the field.			

#198 **4.8-1**	**MM 4.8-23:** All golf course areas shall develop and implement a golf course landscape management plan identifying fertilizer application guidelines, irrigation requirements, and (IPM) approaches. The plan shall include the following elements: a) pruning, fertilizing, mowing, weed control, and irrigation requirements; b) pesticide and fertilizer restricted use areas; and c) and an integrated pest management plan. The integrated pest management plan shall include the following components: a) roles and responsibilities of golf course management entities and pest management objectives; b) a scouting or pest monitoring program; c) pest profiles and threshold tolerance levels; d) cultural control strategies, such as mowing, irrigation, or fertilization; e) biological control strategies; f) chemical control strategies; and g) effectiveness evaluation procedures and record-keeping requirements.	Prior to issuance of certificates of occupancy for the golf course maintenance facility	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant will submit a golf course maintenance plan to the Kern County Planning Department. C. Prior to issuance of certificates of occupancy for the golf course maintenance facility, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared landscape management and integrated pest management plans. D. The Building Inspection Department will verify compliance in the field.			
#199 **4.8-1**	**MM 4.8-24:** All golf course areas shall develop and implement a training manual and outreach plan for golf course employees and managers that shall a) identify on-site practices and activities that could affect water quality; b) identify incorrect procedures and appropriate remedies; c) summarize the required spill prevention and control plan and the landscape management plan; d) provide training on pest scouting and inspecting potential pollutant source areas; and e) identify outreach measures that shall provide golf course patrons and members with information regarding the avoidance of practices that could affect water quality.	Prior to issuance of certificates of occupancy for the golf course maintenance facility	Kern County Planning Department; Kern County Building Inspection Department ; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The will submit a golf course maintenance plan to the Kern County Planning Department. C. Prior to issuance of certificates of occupancy for the golf course maintenance facility, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared a training manual and outreach plan for golf course employees and managers.			

#200 **4.8-1**	**MM 4.8-25:** Water quality basins shall be constructed and maintained to provide treatment controls for residential and commercial land uses in the Castac Lake watershed. The basins shall be designed to capture and retain for a period of 48 hours the volume of runoff produced by an 85th percentile 24-hour rainfall event as calculated in "Stormwater Best Management Practice Handbook" (2003). The basins shall also be designed to capture all dry-weather flows. The basins shall be designed in a manner consistent with the structural and sizing criteria identified in Section 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" (Appendix I-1) and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology" (Appendix I-1).	Prior to issuance of grading permits in the Castac lake watershed	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading permits in the Castac Lake watershed, the applicant will provide evidence to Kern County Building Inspection and Planning Departments that it has prepared a plan for construction and maintenance of water quality basins in the Castac Lake watershed in accordance with "Stormwater Best Management Practice Handbook" (2003), Section 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology" D. The Building Inspection Department will verify compliance in the field.			

#201 **4.8-1**	**MM 4.8-26:** Flow duration control (FDC) basins shall be constructed and maintained to provide treatment controls in the Castac Lake watershed for locations identified in the Tejon Mountain Village Specific Plan for resort residential land uses (approximately six dwelling units per acre). The FDC basins shall be designed to capture the difference in runoff volume between existing and post-construction runoff in the applicable watersheds, including dry-weather flows. The difference in runoff volume shall be infiltrated or discharged at a rate that shall not cause stream channel erosion or other adverse geomorphic effects. The FDC basins shall be designed in a manner consistent with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" (Appendix I-1) and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology" (Appendix I-1).	Prior to issuance of grading permits in the Castac Lake watershed	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading permits in the Castac Lake watershed, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared a plan for flow duration control basins to provide for treatment controls in the Castac Lake watershed for locations identified in the Tejon Mountain Village Specific Plan and consistent with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology". D. The Building Inspection Department will verify compliance in the field.			

#202 **4.8-1**	**MM 4.8-27:** Bioretention areas shall be constructed and maintained to provide treatment controls for locations identified in the Tejon Mountain Village Specific Plan for lower density resort residential and mountain residential land uses, some resort residential areas, and other low-impact, minor land uses. Bioretention areas shall be designed as landscaped, shallow depressions that will store, infiltrate, evapotranspirate, and filter runoff. Bioretention areas shall be designed in a manner consistent with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" (Appendix I-1) and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology" (Appendix I-1).	Prior to approval of grading permits	Kern County Engineering and Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading permits in the applicable areas, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared a plan for construction and maintenance of bioretention areas in accordance with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology". D. The Building Inspection Department will verify compliance in the field.			

#203 **4.8-1**	**MM 4.8-28:** Vegetated swales or filter strips shall be constructed and maintained to provide treatment controls for roadside locations where road slopes are 6% or less. Vegetated swales or filter strips used in locations where road slopes are between 2% and 6% will include check dams to improve infiltration and settling of particulates. Vegetated swales or filter strips shall be designed in a manner consistent with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" (Appendix I-1) and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology" (Appendix I-1).	Prior to approval of grading permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading permits, the applicant will provide evidence to Kern County Building Inspection Department that it has prepared a plan for construction and maintenance of vegetated swales or filter strips in accordance with the structural and sizing criteria identified in Sections 6.6 and 6.7 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" and Section 3.7 of the "Tejon Mountain Village Specific Plan Water Quality Modeling Methodology". D. The Building Inspection Department will verify compliance in the field.			

#204 **4.8-1**	**MM 4.8-29:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency that may be approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department and Environmental Health Services Department, with water quality facility management and compliance responsibilities shall implement the water quality control system operations and management (O&M) in a manner consistent with the O&M tasks and responsibilities identified in Table 6-4 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification Technical Report" (Appendix I-1).	Prior to approval of a TTM or Commercial Site Development Plan	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM or Commercial Site Development Plan, applicant will provide evidence to Kern County Building Inspection Department that a long-term maintenance plan and an appropriately funded entity has been established.			

#205 **4.8-1**	**MM 4.8-30:** The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency that may be approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department, Environmental Health Services Department, and Engineering and Survey Services Department, with water quality facility management and compliance responsibilities shall implement a monitoring and adaptive management plan with the following elements: a) regular hydromodification and treatment control facility performance monitoring, including: (i) visual inspection of representative swales and bioretention areas during storm events to verify storm flow capacities and identify areas of scouring, clogging, or sediment and debris accumulation; b) periodic dry-weather monitoring, including: (i) field inspections of swales, bioretention areas, and basins to identify unanticipated dry-weather flows and (ii) vegetation density and type analysis and sediment accumulation monitoring; c) periodic measurement of basin drawdown rates during storm events to verify basin detention timing and performance; d) periodic hydrologic condition and stream stability and geomorphology monitoring, including: (i) periodic surveys and a photographic record of selected channel cross sections to evaluate bed and bank conditions and materials, including high-water marks, sediment sources, new sources of bank distress, and vegetation suitability to meet conveyance and habitat objectives and (ii) taking aerial photographs of the project area every 5 years until the project is considered complete by Kern County to identify new sources of sediment, identify event-related land use disturbance or evidence of channel change and instability, and assess discontinuities in sediment transport; e) annual data review and evaluation in a manner consistent with the objectives and approaches identified in Table 6-5 of the "Tejon Mountain Village Specific Plan Water Quality and Hydromodification	Prior to approval of a TTM or Commercial Site Development Plan	Kern County Planning Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a TTM or Commercial Site Development Plan, applicant will provide evidence to Kern County Building Inspection Department that a long-term maintenance plan and an appropriately funded entity has been established to administer long-term maintenance of water quality facilities.			

	Technical Report" (Appendix I-1), including (i) implementing corrective measures as necessary and as approved by applicable resource agencies and Kern County to address conditions of concern that may be identified during monitoring data review and evaluation and (ii) completing a summary and keeping adequate records of operational, maintenance, and monitoring activities on an annual basis. Hydromodification and treatment facility performance monitoring shall be implemented on an ongoing basis and shall be initiated when structural treatment measures become operational (elements a–c). Periodic hydrologic monitoring shall be implemented from project approval to 5 years following the completion of construction in each watershed (element d).				
#206 **4.8-1**	**MM 4.8-31:** Prior to the initiation of grading, the project shall request and receive written confirmation from the Tejon Ranch Company that swimming or other contact recreational activity shall be permanently prohibited in Castac Lake and all off-site perennial or seasonal water bodies that receive runoff from the project and that are owned by the Tejon Ranch Company. Tejon Mountain Village residents and guests shall not have any access rights to engage in contact or non-contact uses on Castac Lake. The project area Geologic Hazard Abatement District (GHAD), Tejon Castac Water District, or other government agency that may be approved by the Kern County Administrative Office, in consultation with the Kern County Planning Department and Environmental Health Services Department, with water quality facility management and compliance responsibilities shall post signs and provide educational materials to project residents and guests prohibiting contact with flowing waters in on-site drainages during and following storm events to prevent potential pathogen exposure.	Prior to issuance of a grading permit (for TRC documentation) and certificates of occupancy for CC&Rs)	Kern County Planning Department; Building Inspection Department; Geologic Hazard Abatement District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of a grading permit, the applicant shall request and receive written confirmation from the Tejon Ranch Company that swimming or other contract recreational activity shall be permanently prohibited in Castac Lake and all off-site perennial or seasonal water bodies that receive runoff from the project and that are owned by the Tejon Ranch Company D. Prior to the issuance of certificates of residential occupancy, the applicant shall provide evidence to Kern County Building Inspection Department that the CC&Rs include requirements that signs be posted and disclosures prepared that prohibit residents from contact with storm water.			

#207 **4.8-1**	**MM 4.8-32:** The project shall implement the provisions of the Tejon Mountain Village Specific Plan, the Tejon Mountain Village Master Design Guidelines, and the Tejon Mountain Village Special Plan No. 1, Map 256 that address the preservation of natural open space, reduction of impervious surfaces, use of permeable paving materials, reduction of street widths, minimization of soil disturbance during development to avoid soil compaction, and reduction of land coverage of buildings to the maximum extent feasible to ensure that, at full buildout, approximately 80% of the project area shall be permanently preserved as ranchlands or other open areas.	Prior to approval of a TTM	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a TTM,, Kern County Building Inspection Department will verify that the plan provide for the preservation of natural open space, reduce of impervious surfaces, use permeable paving materials, reduce of street widths, minimization of soil disturbance during development to avoid soil compaction, and reduction of land coverage of buildings to the maximum extent feasible to ensure that, at full build-out, approximately 80% of the project area shall be permanently preserved as ranchlands or other open areas. D. Kern County Planning Department will verify documentation prior to approval.			

#208 **4.8-1**	**MM 4.8-33:** The project shall reduce the amount of directly connected impervious areas (DCIAs) by using vegetated and open area buffers, including roadside swales and vegetated strips, between areas that have impervious surfaces to the maximum extent feasible.	Prior to approval of grading plans	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading plans, Kern County Building Inspection Department will verify that the applicant has included vegetated swales and other methods to reduce the amount of directly connected impervious areas.			
#209 **4.8-1**	**MM 4.8-34:** The project shall incorporate reduced discharge areas that include limited use of decorative concrete, reduced road widths, permeable paving surfaces, detention and retention integration with landscape design, disconnected impervious areas, and preserved open space to the extent feasible. Zero discharge areas such as golf course fairways and roughs shall be incorporated as feasible and appropriate in light of local hydrological and biological conditions.	Prior to approval of a TTM or Commercial Site Development permit	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee; Project Biologist		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a TTM or Commercial Site Development permit, Kern County Planning Department will verify that the Project includes water quality protection measures. D. The Building Inspection Department will verify compliance in the field.			

#210 **4.8-1**	**MM 4.8-35:** The project shall, by appropriate means, prohibit the use of copper- or zinc-based materials for roof and roof drainage facilities. The use of exposed pressure treated woods and galvanized materials that may come into contact with storm water shall be also be limited to the extent feasible.	Prior to issuance of building permits	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to the issuance of building permits, the applicant shall provide Kern County Building Inspection Department with evidence that the CC&Rs (for residential) and commercial management plan prohibits the use of copper- or zinc-based materials for roof and roof drainage facilities and shall limit the use, to the extent feasible, of exposed pressure treated woods and galvanized materials that may come into contact with storm water.			
#211 **4.8-1**	**MM 4.8-36:** This measure shall be implemented to reduce potential long-term water quality impacts as follows: The project shall protect on-site slopes and channels by implementing Policy 35 of the Tejon Mountain Village Specific Plan and, to the maximum extent practicable, design development to a) conserve riparian and wetland areas; b) conserve large blocks of key habitat types, such as oak woodlands and savannah; c) avoid floodplain incursions; and d) avoid geologic hazards, steep and unstable slopes, and fault zones.	Prior to approval of grading plans	Kern County Planning Department TMV Design Review and Approval		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of grading permits, the applicant will provide evidence to the Kern County Planning Department that the grading plans and or geotechnical reports include provisions for protecting riparian, wetlands, key habitat types and avoid flood plans and geological hazards.			

#212 **4.8-1**	**MM 4.8-37:** Commercial areas shall incorporate and implement the following source and treatment control measures: a) loading docks shall be covered or designed to preclude run-on and runoff, and depressed loading docks shall not be directly connected with storm drains; b) below-grade loading docks for fresh food shall drain through an appropriate treatment control mitigation measure such as a catch basin insert; c) loading docks shall be kept in a clean and orderly condition through weekly sweeping and litter control and immediate cleanup of spills and broken containers without the use of water; d) commercial areas shall not contain vehicle repair or maintenance bays except in designated auto service stations or as required for recreational activities, such as golf courses; e) commercial car wash facilities shall be self-contained or covered with a roof or overhang, equipped with a wash racks and a clarifier or other pretreatment facility, and properly connected to a sanitary sewer; f) food preparation areas shall utilize contained areas or sinks with sanitary sewer connections for disposal of wash waters containing kitchen and food wastes, and external containment areas or sinks shall be structurally covered to prevent the entry of stormwater; g) adequate signs shall be provided and appropriately placed prohibiting other discharge of wash water to the storm drain system; h) commercial and multi-family residential parking lots shall incorporate bioretention facilities located in islands as feasible to promote filtration and infiltration of runoff; i) stormwater runoff from other parking lots shall be directed to treatment control areas such as bioretention areas and basins; j) fuel dispensing areas shall be covered with an overhanging roof structure or canopy equal to or greater than the area within the grade break and the cover and downspouts shall not drain onto the fuel dispensing area; k) fuel dispensing areas shall be paved with Portland cement concrete (or an equivalent smooth impervious surface) and the use of asphalt concrete shall be prohibited; l) fuel dispensing areas shall have a 2% to 4% slope to prevent ponding, and shall be separated from the rest of the site by a grade break; and) concrete fuel dispensing areas must extend 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less.	Prior to issuance of commercial building permits	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of commercial building permits for applicable commercial uses, the applicant shall provide evidence to the Kern County Planning Department of incorporation and implementation of the featured source and treatment control measures. D. The Building Inspection Department will verify compliance in the field.			

#213 **4.8-2**	**MM 4.8-38:** The project shall prohibit the construction of wells for the purpose of irrigating on-site golf courses or other external landscaped areas.	Prior to final recordation of any land division map	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to final recordation of any land division map, Kern County Planning and Building Inspection Departments to verify in the field that no such wells have been constructed			

#214 **4.8-3**	**MM 4.8-39:** In conjunction with the submittal of any proposed tentative tract map, parcel map or commercial site development plan, the project proponent shall submit a flood hazard study/drainage plan as required by Section 18.15.030 (J) (2) of the Kern County Land Division Ordinance. This flood hazard study/drainage plan shall be reviewed and approved by the Kern County Engineering and Survey Services Department prior to final approval of any subdivision map or approval of any commercial site development plan. In general, subject to final approval by the County, the project shall implement Section 3.4.3 of the Tejon Mountain Village Specific Plan, including the following provisions: a) size road crossings of drainage ways, including culverts, boxes, arched culverts or bridges, to adequately pass flows while protecting the roadway, adjacent properties, and the hydrologic regime of the drainage course; b) design drainage crossings in accordance with the Kern County Drainage Development Standards and the Kern County Stormwater Ordinance (Chapter 14.26 of the Ordinance Code of Kern County) except as may be specifically modified in the Tejon Mountain Village Specific Plan subject to County approval or by the terms of any required regulatory permits for the project; c) culvert designs shall include inlet protection to protect the roadway embankment from erosion and outlets shall be provided with energy dissipation devices to reduce outlet flow velocities; d) culverts shall be sized to pass bulked flows, and impoundments of stormwater that would act to settle out the bedload of streams shall be avoided to the extent feasible or as may be required to maintain water quality conditions in certain receiving waters, such as Castac Lake; e) arch culverts shall be designed to span the natural stream and support earthen embankments for roadway crossings and shall incorporate energy dissipation techniques to reduce the potential for streambed erosion; f) bridge crossings shall incorporate energy dissipation techniques to reduce the potential for streambed erosion; g) road alignments shall be designed to cross drainages in as close to a perpendicular crossing alignment as possible; h) compacted fill, berming, or bank stabilization shall be utilized where grading occurs along drainage channels; and i) if the project cannot feasibly avoid an existing low-flow channel, a constructed channel or an underground conduit, or a combination of both techniques,	Prior to approval of street improvement plans	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans, Kern County Building Inspection Departments to verify drainage culvert and bridge designs are consistent with Kern County Drainage Standards and Kern County Stormwater Ordinance.			

	shall be used to convey post-construction flows, and in steeper drainages, a constructed channel shall include a series of flatter stretches with rock drop structures to control water velocity.				
#215 **4.8-3**	**MM 4.8-40:** In conjunction with the submittal of any proposed tentative tract map, parcel map or commercial site development plan, the project proponent shall submit a flood hazard study/drainage plan as required by Section 18.15.030 (J) (2) of the Kern County Land division Ordinance. This flood hazard study/drainage plan shall be reviewed and approved by the Kern County Engineering and Survey Services Department prior to final approval of any subdivision map or approval of any commercial site development plan. In general, subject to final approval by the County, the project shall implement Section B.3.b of the Tejon Mountain Village Specific Plan Master Design Guidelines, including the following provisions: a) site drainage shall be designed to maximize the use of natural drainage courses, to control erosion and sedimentation, and to avoid the potential for flooding; b) natural drainage courses shall be protected and existing drainage patterns maintained to the extent feasible; c) increased water flows off of the development sites due to increases in impervious surfaces shall be managed to the greatest extent feasible on site by systems that retain water and encourage percolation; d) constructed ditches and channels shall be utilized only when necessary to ensure maximum control of drainage; e) natural appearing swales with stone and small boulders to simulate natural drainage patterns, and to slow the flow of water, shall be used wherever feasible in lieu of constructed ditches and channels; f) drainage design shall address any potential for erosion and consequent downstream water quality impacts and flooding resulting from development; g) erosion control and stream protection measures shall be required during construction; and h) surface drainage shall be managed to minimize erosion to the extent feasible by such means as the following: (i) slope gradients shall be minimized to slow water and achieve groundwater recharge and develop overland sheet drainage to avoid drainage	Prior to improvement of grading plans	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of grading plans,, the applicant shall submit evidence to Kern County Building Inspection Department that drainage design is consistent with Section B.3.b of the Tejon Mountain Village Specific Plan Master Design Guidelines.			

	concentration, (ii) water shall be intentionally directed to appropriate catchments, minimizing run-off velocity to diminish erosion and sediment, (iii) collection facilities shall be placed at the edges of paved areas and avoid extreme changes of grade related to collection facilities; (iv) collection facilities shall be constructed with sumps, traps, or other devices to trap pollutants from paved surfaces used by vehicles prior to releasing flows into natural watercourses; (v) erosion shall be controlled at the exits of drainpipes by the installation of energy dissipaters, boulders and stones, or other devices that blend in with the natural setting; (vi) water bars shall be installed on gravel or earthen pathways to minimize the potential for erosion and (vii) percolation shall be encouraged through the use of bioswales and permeable pavement materials.				
#216 **4.8-4**	**MM 4.8-41:** Flood control berms shall be engineered and implemented as required to protect proposed development in areas subject to potential 100-year flood risks east of the Interstate 5, west of Cuddy Creek, and south of Castac Lake. The berms shall be designed to provide a minimum of 100-year flood protection and shall incorporate identified bank stabilization measures.	Prior to approval of grading permits adjacent to Cuddy Creek	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.8-41 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to approval of grading permits adjacent to Cuddy Creek, applicant shall submit a plan to the Kern County Building Inspection Department for the flood control berms to protect development during 100 year storm events.			

#217 **4.8-4**	**MM 4.8-42:** Engineered embankments and berms shall be designed to include bank stabilization measures in the form of riprap, soil cement, or geo-grid slope stabilization as required to control watercourse flow rates and velocities and shall include toe-down or cut-off considerations to address potential scour where an embankment or berm meets a watercourse overbank.	Prior to approval of grading permits	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.8-42 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to approval of grading permits, applicant will provide evidence to the Kern County Building Inspection Department that engineered banks and berms are designed to include bank stabilization measures.			

#218 **4.8-4**	**MM 4.8-43:** The project is required to manage flows to reduce the potential for downstream flooding. Concurrent with the submittal of any tract map, parcel map, or commercial site development plan the project proponent shall prepare a drainage study for review and approval by Kern County Engineering and Survey Services to ensure the existing flood control measures are effective and that future development does not cause flooding downstream. The following flood-control measures shall be implemented prior to the issuance of any building permit (except for permits authorizing construction of the marketing center, gatehouse and construction offices) for development that would drain into Grapevine Creek as determined by the drainage study. If the proposed development will not drain into Grapevine Creek, the project proponent will be subject to flood control measures required by Kern County Engineering and Survey Services per the submitted approved drainage study. a. The proposed Lake Drive culvert modifications will be reconfigured by raising the seven 18" low level culverts to elevation 3506 above mean sea level (see Stantec Drainage Report Figure 5 for a depiction of the outlet culvert configuration). The previous proposal established an invert elevation of 3499.49 above mean sea level for the seven 18" low level culverts. This will provide the additional dead storage required to retain the increase in run-off volume associated with the developed condition and therefore mimics the existing condition frequency of discharges considering the impact of the Project. b. The revised conceptual culvert configuration will be finalized in conjunction with confirming flood routing results for the various return frequency storm events including the 2-Yr, 5-Yr, 10-Yr, 25-Yr and 100-Yr events. Consistent with the previous drainage study results, the final culvert configuration will also ensure peak flow rates are not increased downstream of the Project including at Lake Drive and the hydrologic confluence point at Grapevine Creek and Rising Canyon.	Prior to approval of improvement plans for the bridge over Grapevine Creek	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.8-43 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. The Building Inspection Department will verify compliance in the field.			

	c. In addition to the measures mentioned above, flash boards placed immediately upstream of the low level culverts will be considered as a means to provide additional dead storage to elevation 3507 above mean sea level, resulting in an additional 423 acre-feet of storage. The flash boards will be assessed in the flood routing analyses for the various return frequency storm events in order to determine peak discharge results. However, it is assumed that the flash boards would not be installed initially but rather would provide for a reactionary program based upon downstream monitoring as it relates to the frequency of discharges. d. A drain culvert(s) will be incorporated into the Castac Lake outlet configuration to be set at approximately elevation 3499.5 (this would match the existing condition low flow scenarios with the existing culvert invert elevation also at approximately 3499.5 above mean sea level). The drain culvert(s) would be gated and not accounted for in the flood routing analyses. However, the drain culvert(s) can be "opened" in reaction to monitoring of existing wetland areas downstream and determination that low flows would benefit the habitat. e. Developer shall obtain a written commitment from Tejon Ranch Company (TRC) that TRC will manage Castac Lake at an elevation 3,500 above sea level, providing an additional 1,076 acre-feet of storage below elevation 3,503. f. Hydrologic and vegetation conditions in Grapevine Creek shall be monitored. This will include a monitoring program for pollutants of concern at a downstream monitoring location upstream (east) of I-5 for a 2-year period following the completion of Lake Drive improvements. If monitoring indicates that vegetation is being adversely affected by the reduced peak flow that would result from the proposed elevation of Lake Drive and arch culvert system, supplemental culverts, gates, or other appropriate means shall be installed as required to recreate pre-construction peak-flow discharge rates.	

#219 **4.8-6**	**MM 4.8-44:** To reduce the potential for recycled water to adversely affect groundwater quality through reclamation, salinity BMPs will be implemented prior to wastewater generation. BMPs are primarily in the form of a) banning self regenerating water softeners; b) regulating the discharge of salt swimming pools into the sewer system; and c) public education related to the use of garbage disposals and types of detergents that tend to increase wastewater salinity. Salinity BMPs shall be included in the Tejon Mountain Village Specific Plan, and will be applicable to all private residences, commercial areas, or other privately owned or managed facilities within the Project. Recycled water will be blended with raw water prior to application to golf course land to reduce salinity concentrations in recycled water.	Prior to issuance of the building permit for the waste water treatment plant	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a building permit for the waste water treatment plant, the applicant will provide evidence to Kern County Building Inspection Department that either Tejon-Castac Water District or an appropriately funded entity has been established to monitor the effects of recycled water on ground water.			

#220 **4.8-6**	**MM 4.8-45:** Groundwater salinity and electrical conductivity levels within the California Department of Water Resources (DWR) Basin 5-29 shall be monitored to determine if recycled water use is adversely affecting groundwater quality and whether additional salinity treatment processes should be incorporated into the reclaimed water treatment process. In addition, salinity and electrical conductivity levels in the raw water, wastewater influent, treated wastewater effluent, and effluent storage basin will also be monitored to determine the potential for recycled water use to adversely affect groundwater quality. The wastewater treatment facility operator shall ensure that, at all times, recycled water used within the project area shall be treated to the tertiary treatment standard under Title 22 of the California Code of Regulations, which allows for unrestricted outdoor irrigation use of recycled water supplies.	Prior to the issuance of the building permit for the waste water treatment plant	Wastewater Treatment Facility Operator; Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a building permit for the waste water treatment plant, the applicant will provide evidence to Kern County Building Inspection Department that Tejon-Castac Water District will ensure recycled water used within the project area shall be treated to the tertiary treatment standard under Title 22 of the California Code of Regulations.			
#221 **4.8-7**	**MM 4.8-46:** All habitable structures that may be situated within a 100-year floodplain identified on applicable Flood Insurance Rate Maps (FIRMs) that include the project area shall be constructed on foundations, fill, or by other appropriate means to elevate each structure to a height that is a minimum of 1 foot above the 100-year flood inundation level at the location of the structure.	Prior to the issuance of building permits for habitable structures located within the 100 year flood plain	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The Kern County Planning Department will verify documentation prior to approval.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.9 Land Use					
#222 **4.9-2**	**Mitigation Measure 4.9-1:** Should the Master Developer, Tejon Mountain Village, LLC, or its designee or assignee file for bankruptcy and become financially unable to comply with mitigation obligations assigned to the Master Developer in the Final Environmental Impact Report Mitigation Measures, then an alternate entity (or entities) acceptable to the County, such as a Geologic Hazard Abatement District ,may assume responsibility for compliance with such mitigation obligations. Nothing in this mitigation measure alters or amends the rights of the County to fully enforce the Specific Plan and the Special Plan, and both minor and major amendments to the Specific Plan and/or Special Plan must be approved by the County Planning Department, the Planning Commission and/or Board of Supervisors, as required by applicable County ordinance. Additionally, nothing in this mitigation measure allows any deviation from the obligation to implement all mitigation measures in the Final Environmental Impact Report, the requirements of the Specific Plan and Special Plan and any proposed change to such mitigation obligations would be subject to review and approval by the County and may require further environmental review including public notice and hearings as required by applicable County ordinances, CEQA, and other applicable legal requirements.	Bankruptcy of Master Developer, designee or assignee	Kern County Planning Department		
		A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. If at the determination of the Kern County Planning Department, the Master Developer, its designee or assignee becomes financially unable to comply with the mitigation obligations, the Kern County Planning Department may approve another entity to assume responsibility for compliance with the mitigation obligations.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.11 Noise					
#223 **4.11-1**	**MM 4.11-1:** The following construction noise control measures shall be implemented by the project proponent and be included as notes on all grading or building permits issued on the project site. a. Construction operations shall occur between 6:00 a.m. and 9:00 p.m. Monday through Friday or between 8:00 a.m. and 9:00 p.m. on weekends or on federal holidays. Construction activities shall not occur between the hours of nine (9:00) p.m. and six (6:00) a.m. on weekdays and on weekends or federal holidays, if audible to a person with average hearing faculties or capacity at a distance of 150 feet from the construction site or if within 1,000 feet of an occupied residential dwelling. Construction activities outside of these time periods can occur only if the emergency and other related criteria set forth in Kern County Noise Ordinance Code 8.36.020(H) are satisfied. b. All noise-producing construction equipment and vehicles using internal combustion engines shall be equipped with mufflers; air-inlet silencers, where appropriate; or any other shrouds, shields, or other noise-reducing features, in good operating condition, that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders or air compressors) shall be equipped with shrouds or similar noise-control features. c. To the extent feasible, the noisiest operations shall be scheduled to occur together in the construction program to avoid prolonged periods of high noise emissions. d. Construction site and access road speed limits shall be established and enforced during the construction period. e. Material stockpiles and/or vehicle staging areas shall be located as far as practicable from dwellings. f. The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be limited only to safety warning purposes. g. Any public address system operated on the project site shall be designed and adjusted to avoid and minimize the "spillover" of sound onto adjacent properties. h. No music or electronically reproduced speech related to project construction shall be audible at a noise-sensitive property.	Prior to issuance of grading and building permits	Kern County Planning Department; Kern County Engineering and Survey Service Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.11-1 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. The Building Inspection Department will verify in the field during construction period.			

#224 **4.11-1**	**MM 4.11-2:** No residential units shall be allowed within 500 feet of the Interstate 5 right of way. Each final subdivision map must identify this corridor, as shown in Figure 4.11-5.	Prior to approval of TTMs including residential units adjacent to I-5	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of TTMs including residential units adjacent to I-5, applicant will provide evidence to Kern County Planning and Engineering & Survey Service Departments that no residential units shall be allowed within 500 feet of the Interstate 5 right of way.			

#225 **4.11-1**	**MM 4.11-3:** Any subdivision map that proposes the construction of sensitive uses including residences, parks, and recreational areas within the Interstate 5, Lake Drive, or Crane Canyon noise contours shown on Figure 4.11-5 shall require a noise assessment prior to final approval of the map. The design features required to achieve the noise standard shall include one or more of the following elements, as verified by the noise assessment: building setbacks from the roadway, noise barriers, building orientation relative to the roadway, sound-rated windows, upgraded exterior wall and/or roof construction, insulation batts, and/or forced air ventilation. Any such proposed mitigation must conform to the Design Guidelines identified in the Tejon Mountain Village Specific Plan and Community Plan and the Tejon Mountain Village Special Plan No. 1, Map 256.	Prior to approval of a TTM within I-5, Lake Drive or Crane Canyon noise contours	Kern County Planning Department; Kern County Engineering and Survey Services Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM within I-5, Lake Drive or Crane Canyon noise contours, the applicant will provide evidence to Kern County Building Inspection Department that a noise a assessment has been prepared for any subdivision map that proposes the construction of sensitive uses. C. MM 4.11-3 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. D. Kern County Planning Department will verify the note prior to approval.			

#226 **4.11-2**	**MM 4.11-4:** Prior to conducting onsite blasting required for project construction within 2,000 feet of residential land uses, a qualified blasting specialist shall be retained to develop a site-specific blasting program report to assess, control, and monitor airblast and ground-borne vibration. The report will be reviewed and approved by Kern County prior to issuance of a blasting permit. The report shall include, at a minimum, the following provisions: a. Current, state-of-the-art technology shall be required to reduce blast-related vibration at offsite residential and other occupied structures as low as possible, consistent with blasting safety and blast vibration, measured on the ground adjacent to a residential or other occupied structure, shall not be allowed to exceed the frequency-dependent limits specified in the Alternative Blasting Level Criteria contained in U.S. Bureau of Mines Report of Investigations 8507. b. Current, state-of-the-art technology shall be required to reduce airblast at offsite residential and other occupied structures as low as possible and airblast, measured at a residence or other occupied structure, shall not be allowed to exceed the 0.013-pound-per-square-inch (133 decibel) limit set forth in U.S. Bureau of Mines Report of Investigations 8485. c. Blasts within 1,000 feet of residential and other occupied structures shall be monitored at the residence or occupied structure closest to the blast site to verify that measured levels are within applicable limits. The monitoring shall use a blasting seismograph with three channels that record in three mutually perpendicular axes, with a fourth channel for recording airblast, a frequency response from 2 to 250 Hertz, and with a minimum sampling rate of 1,000 samples per second per channel. If blasting is found to exceed specified levels, blasting shall cease, and alternative blasting or excavation methods shall be employed so that the applicable levels are not exceeded.	Prior to issuance of a grading permit that includes blasting	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of any grading permit that includes the potential for blasting, applicant will provide evidence to Kern County Building Inspection Department that a qualified blasting specialist has been retained to develop a site-specific blasting program report to assess, control, and monitor airblast and ground-borne vibration			

#227 **4.11-2**	**MM 4.11-5:** All residences located within 2,000 feet of the proposed blast site shall receive written notice at least 24 hours prior to any proposed blasting. This notice shall include the approximate time at which the blasting will take place, along with contact information for a project representative knowledgeable about the proposed blasting activity. The fire station located in closest proximity to the proposed blasting site shall also receive notice of blasting 24 hours prior to any proposed blasting.	Prior to issuance of a grading permit that includes blasting	Kern County Planning Department; Kern County Building Inspection Department ; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of any grading permit that includes the potential for blasting, applicant will provide evidence to Kern County Building Inspection Department that a qualified blasting specialist has been retained to develop a site-specific blasting program report that includes notification requirements.			
#228 **4.11-3**	**MM 4.11-6:** The following statement shall be included as a note on the final map for all subdivisions, commercial site plans and included in the project Covenants, Conditions and Restrictions (CC&Rs): "This property is presently located under military training routes and a supersonic corridor subject to use by the Department of Defense. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to the routes and corridor (for example: noise, vibration, low-level over flight or sonic booms). Tejon Ranch currently operates a helispot	Prior to issuance of residential certificates of occupancy	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee		

	and the project includes construction and operation of two additional helipads and you may be exposed to noise impacts from helicopter overflights. Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you." The Master Developer will ensure that this disclosure statement is provided to, and acknowledged in writing by, each prospective property buyer within the project.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Kern County Building Inspection Department will verify that CC&R's include a disclosure describing the potential for military and helicopter over-flights.			
#229 **4.11-6**	**MM 4.11-7:** No residential uses shall be constructed within 200 feet of the proposed helipads. The location of the proposed helipads shall be noted on the final subdivision map, as well as the 200-foot contour. The Department of Defense Regional Environmental Coordinator for Navy Southwest shall be notified when permits are submitted to Caltrans Department of Aeronautics or if the helipads are deemed to be exempt from a State permit and the locations of the helipads.	Prior to approval of a FTM	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a FTM, Kern County Building Inspection Department will verify that no residential uses shall be constructed within 200 feet of the proposed helipads and that the location of the proposed helipads should be noted on the final subdivision map, as well as the 200-foot contour			

Justification: Impacts 4.11-1 and 4.11-3 to Noise and cumulative impacts to Noise are considered significant and unavoidable. All feasible and reasonable changes or alterations have been required in, or incorporated into, the proposed Project that substantially lessen the potentially significant effect as identified in the Final EIR. For all other Noise impacts, changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.

4.13 Public Services					
#230 **4.13-1**	**MM 4.13-1:** a. Prior to issuance of building permits, the applicant shall be subject to any development impact fee (in an amount ranging from $6,000 to $12,000) for public services adopted by the Kern County Board of Supervisors. Payment of that fee will be considered full mitigation for impacts to public services specifically referenced in the development impact fee. Adjustments to this development impact fee for mitigation already provided shall be made in consultation with the County Administrative Office based on the mitigation in the EIR and any applicable development agreement provisions that relate to the underlying costs associated with the development impact fees. The development impact fee would be reduced by the fee increment attributable to impacts included in this EIR for which mitigation has been required (e.g., fire and sheriff services, schools, libraries, and public utilities). The applicant shall be required to pay for that increment of a development fee for impacts that are not included in this EIR. b. Prior to the issuance of any building permits, a Geologic Hazard Abatement District (GHAD), the Tejon Castac Water District or other government agency will have completed the district formation process through order formation, as detailed in applicable government code necessary or annexation process. The district, or a combination of public agencies, will be authorized to provide the following services: water utility, sewer waste disposal, lighting and lighting maintenance, street and road construction and maintenance, vector control, drainage and drainage maintenance, resource conservation, flood control. The project applicant will provide to the Kern County Planning Department and the County Administrative Office for review and approval, a detailed description as to which government agency will be providing each of the identified public services.	Prior to issuing building permits	Kern County Planning Department; Kern County Building Inspection Department; Geologic Hazard Abatement District; Tejon Castac Water District or Other Government Agency		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.11-4 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Kern County Planning Department will verify the note prior to approval. D. Prior to the issuance of building permits, the applicant shall pay development impact fees for public services.			

#231 **4.13-2**	**MM 4.13-2:** Prior to the issuance of the first building permit for the project, the project proponent shall provide approximately 1.75 acres of land to be utilized for the construction of a new fire station to replace the existing Station 56 and to house the Initial Attack Fire Crew 82. When the County is ready to exercise its right to acquire the land, the site shall be selected by the project applicant and approved by the Kern County Fire Department. The site shall be located in close proximity to the existing Station 56 and near Interstate 5. The final site, size, and configuration of the dedicated land will be per a final site plan that is acceptable to both Tejon Mountain Village and the Kern County Fire Department. The project applicant shall provide to the County 50% of the funding required to reconstruct Station 56 at this new location. The minimum size of the facility shall measure 11,372 square feet, including 2,346 square feet of covered porches and parking, and shall be in conformance with the fire department's "Multi-Company Fire Station W/Battalion Chief H.Q. Floor Plan." All requirements and specifications for construction will be to the satisfaction of the Kern County Fire Department. The County shall commence preparation of the construction documents for Fire Station 56 concurrent with issuance of the first retail or office building permit and the County's ability to fund 50% of the facility from non-project-generated fire funds, unless mutually agreed upon by the project proponent and Kern County. Once the certificate of occupancy has been issued for the new Station 56 facility, the County shall transfer to ownership of Tejon Mountain Village the existing land and all existing buildings of the previous Station 56.	Prior to issuing building permits	Kern County Planning Department; Kern County Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of the first residential building permit, the applicant shall provide Kern County Planning Department with evidence that it has provided approximately 1.75 acres of land in a location acceptable tot Kern County Fire Department to be utilized for the construction of a new fire station to replace the existing Station 56 and to house the Initial Attack Fire Crew 82 and that it has provided 50% of the funding required to reconstruct Station 56 at this new location to the Kern County. C. MM 4.13-2 will incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. D. Kern County Planning Department will verify the note prior to issuance of the first residential building permit. E. Once the certificate of occupancy has been issued for the new Station 56 facility, Kern County shall transfer to ownership of Tejon Mountain Village the existing land and all existing buildings of the previous Station 56			

#232 **4.13-2**	**MM 4.13-3:** Prior to issuance of the 500th residential building permit, the project proponent shall provide to the Kern County Fire Department funding for the purchase of a ladder truck. One year in advance of the 500th residential building permit, the project applicant shall request and be provided by the Kern County Fire Department a written statement of the amount of funding required for the purchase of the specific ladder truck.	Prior to issuing the 500th residential building permit	Kern County Planning Department; Kern County Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to issuance of the 500th residential building permit C. Prior to the issuance of the 500th certificate of residential occupancy, the project proponent shall provide to Kern County Planning Department with evidence that it has provided the Kern County Fire Department funding for the purchase of a ladder truck D. One year in advance of the 500th residential building permit, the project applicant shall request and be provided by the Kern County Fire Department a written statement of the amount of funding required for the purchase of the specific ladder truck			

#233 **4.13-2**	**MM 4.13-4:** The project proponent shall provide funding through the project's contribution to the fire fund or if those funds are not sufficient, other methods, to cover 100% of the additional non-staffing operational costs of the ladder truck and 50% of the staffing costs of the ladder truck. The County Administrative Office shall determine the amount to funding necessary. One year in advance of the 500th residential building permit, the project applicant shall request and be provided by the County Administrative Office a written statement of the amount of funding required for operation of the ladder truck and the amount of funding required to cover 50% staffing costs of the ladder truck.	Prior to issuing the 500th residential building permit	Kern County Planning Department; Kern County Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of the 500th certificate of residential occupancy, the project proponent shall provide to Kern County Planning Department with evidence that it has provided the Kern County Fire Department funding to cover 100% of the additional non-staffing operational costs of the ladder truck and 50% of the staffing costs of the ladder truck C. One year in advance of the 500th residential building permit, the project applicant shall request and be provided by the County Administrative Office a written statement of the amount of funding required for operation of the ladder truck and the amount of funding required to cover 50% staffing costs of the ladder truck			

#234 **4.13-2**	**MM 4.13-5:** The project proponent shall provide a permanent fire station located in the Dry Fields area as identified on the Tejon Mountain Village Special Plan No. 1, Map 256. The construction of the fire station shall occur by one of the following options: a. Option 1. The project applicant shall construct one neighborhood-style, three-person fire station, acceptable to Kern County, at the Dry Fields location identified by the Tejon Mountain Village Special Plan No. 1, Map 256, before the Kern County Engineering and Survey Services Department, Building Inspection Division, issues the 2,000th residential building permit for the project site. Approximately 1.5 acres of land (net) will be required to accommodate the station. The minimum size of the facility shall measure 8,875 square feet, including 2,282 square feet of covered porches and parking, and shall be in conformance with the Kern County Fire Department's "Standard Fire Station-Floor Plan." All requirements and specifications for construction will be to the satisfaction of the Kern County Fire Department; or b. Option 2. Prior to the issuance of the first building permit for residential, resort, or commercial uses located in Special Plan Area 4 as identified on the Tejon Mountain Village Special Plan No. 1, Map 256, the project applicant shall provide up to $1,000,000 to the County to construct a temporary fire station located in Special Plan Area 4. A permanent fire station shall be constructed at this location to the specifications identified above in Mitigation Measure 4.13-5(a) prior to the Kern County Engineering and Survey Services Department, Building Inspection Division, issuing the 2,000th residential building permit for the project site; or c. Option 3. Construction of the fire station shall occur in an alternative manner that has been mutually agreed upon by the project applicant and Kern County.	Prior to issuing the 2000th building permit or prior to issuing the first building permit for residential, resort, or commercial uses located in Special Plan Area 4	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuing the 2000th building permit or prior to issuing the first building permit for residential, resort, or commercial uses located in Special Plan Area 4, the applicant shall provide evidence to Kern County Planning Department that it will construct the Dry Fields fire station under one of the three featured options.			

#235 **4.13-2**	**MM 4.13-6:** Prior to the issuance of the final certificate of occupancy for the required permanent or temporary fire station in the Dry Fields area, the project applicant shall provide to the Kern County Fire Department funding for the purchase of one Type 1 Fire Engine and one Type 3 Wildland Fire Engine. Concurrent with the issuance of a building permit for the required fire station, the Kern County Fire Department will provide the project applicant with a written statement of the amount of funding required for the purchase of the specified Type 1 Fire Engine and the Type 3 Wildland Fire Engine.	Prior to the issuance of the final certificate	Kern County Planning Department; Kern County Fire Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to Prior to issuing the 2000th building permit or prior to issuing the first building permit for residential, resort, or commercial uses located in Special Plan Area 4, the applicant shall provide evidence to Kern County Planning Department that it will provide funding for the purchase of one Type 1 Fire Engine and one Type 3 Wildland Fire Engine. C. With the issuance of a building permit for the required fire station, the Kern County Fire Department will provide the project applicant with a written statement of the amount of funding required for the purchase of the specified Type 1 Fire Engine and the Type 3 Wildland Fire Engine.			
#236 **4.13-2**	**MM 4.13-7:** Prior to the issuance of the first building permit in Planning Area 2 as identified on the Tejon Mountain Village Special Plan No. 1, Map 256, the project applicant shall provide up to 1.5 acres of land to be utilized for construction of a future fire station. When the County is ready to exercise its right to acquire the land, the site shall be selected by the project applicant and approved by the Kern County Fire Department.	Prior to issuance of the first building permit in Planning Area 2	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of the first residential building permit in Planning Area 2, the applicant shall provide up to 1.5 acres of land in a location approved by Kern County Fire Department to be utilized for construction of a future fire station.			

#237 **4.13-2**	**MM 4.13-8:** Prior to approval of any tentative tract maps, parcel map, or Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256, the project applicant shall provide an emergency service communications plan (or evidence of a previously implemented plan) for emergency communications with fire and sheriff department communications systems within the area covered by the project site. Communication system improvements will include up to two communications towers paid for by the project proponent. Any such new communication equipment shall be sited and constructed in compliance with the mitigation measures included in this EIR.	Prior to approval of any tentative tract maps, parcel map, or Commercial Site Development Plan	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of any TTM, parcel map or Commercial Site Development permit, applicant will shall provide evidence to Kern County Planning Department that it has provided an emergency service communications plan (or evidence of a previously implemented plan) for fire and sheriff department communications systems within the area covered by the project site.			
#238 **4.13-3**	**MM 4.13-9:** Prior to issuance of any residential building permit, the project proponent shall provide a minimum 100-square-foot office facility to be located on the Tejon Mountain Village site. This office shall be located in the public access areas of the project site and remain available to the Kern County Sheriff's Department indefinitely, or until such time as the Sheriff's Department indicates in writing that the onsite facility is no longer required. This office facility shall have at least two rooms and include the shared use of a restroom and a kitchen.	Prior to issuance of any residential building permit	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of any residential building permit, the applicant will provide Kern County Planning with evidence that it has provided a minimum 100-square-foot office facility to be located on the Tejon Mountain Village site.			

#239 **4.13-3**	**MM 4.13-10:** Upon issuance of the first building permit for the project, the County Administrative Office shall determine the amount to fund an additional sheriff deputy (Deputy 2 C-A) until the property tax revenue from the project fully compensates for the position. This identified funding amount shall be provided to the County by the applicant for the purposes of funding an additional sheriff deputy.	Upon issuance of the first building permit	Kern County Building Inspection Department; County Administrative Office; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of the first building permit, the applicant will provide evidence to Kern County Building Inspection Department that the project will fund an additional sheriff deputy (Deputy 2 C-A), in an amount determined by the County Administrative Office, until the property tax revenue from the project fully compensates for the position.			
#240 **4.13-3**	**MM 4.13-11:** The project shall provide funding on a fair-share basis to defray the costs incurred by the Kern County Sheriff's Department in providing facilities to house additional officers to serve the project at full build out. The project's fair-share costs are estimated to be $2,570,630 based on the Capital Improvement Plan. Prior to the issuance of any building permit, the project proponent shall pay the following development fees: a. Residential Unit $720 per dwelling unit b. Commercial $129 per 1000 square feet of commercial space c. Hotel $73 per room d. Golf $280 per golf course hole	Prior to issuance of any building permit	Kern County Planning Department; Kern County Sheriff's Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.13-11 will be incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Prior to the issuance of any building permit, the applicant will provide proof of payment of Sheriff Department fees to Kern County Building Inspection Department.			

#241 **4.13-4**	**Mitigation Measure 4.13-12:** Prior to the approval of the first building permit for the project, the project proponent shall either pay developer fees with each building permit to the appropriate school district(s) or negotiate a school mitigation agreement to the satisfaction of the school district(s) that would be affected by the project in accordance with the provisions of California Government Code Section 65996 and related implementing legislation and regulations. Within one year of Project approval, The Master Developer, Tejon Mountain Village, LLC, or their designee, will provide to El Tejon Unified, Arvin Union, and Kern High School Districts a general progress report regarding Project development status along with an estimate as to what general areas development may occur throughout the course of the year. General progress reports must be provided to each of the Districts thereafter, until Project completion, at no less than one year intervals. These progress reports may be in the form of updated Mitigation Monitoring Plans, showing which Mitigation Measures have been completed.	Prior to the approval of the first building permit and as part of the annual report	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the issuance of the first residential building permit, the project proponent shall either pay developer fees with each building permit to the appropriate school district(s) or negotiate a school mitigation agreement to the satisfaction of the school district(s) that would be affected by the project in accordance with the provisions of California Government Code Section 65996 and related implementing legislation and regulations. C. As part of the annual monitoring report that is provided by the applicant to Kern County Planning Department and three school districts that service the project, the applicant will provide an updated construction schedule.			
#242 **4.13-5**	**Mitigation Measure 4.13-13:** Prior to the issuance of building permits, the project applicant shall provide funding on a fair-share basis to offset costs associated with the Kern County Library Department for providing additional library volumes necessary to provide or maintain adequate levels of service to the project within County standards. The total fair-share costs are estimated to be $692,139 based on the project's projected 10,671 residents and the CIP's service standard of 1.38 volumes per person with a cost of $47.00 per volume. Required fees are subject to the most current Consumer Price Index (CPI) as determined by the County Administrative Office. Prior to the issuance of any building permit, the project proponent shall pay the following development fees: a. Residential Unit $200.62 per dwelling unit	Prior to issuance of building permits	Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of building permits, the applicant will provide evidence to Planning Department that it has paid library fees			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.14 Recreation					
#243 **4.14-1**	**MM 4.14-1:** Prior to final recordation of the any subdivision map, the applicant will dedicate land and/or pay in-lieu fees for parkland dedication to the applicable park districts in compliance with Government Code Section 66477 (Quimby Act) and the Kern County Land Division Ordinance Chapter 18.50, 18.98 or 18.100 or provide written confirmation from applicable park districts the project has meet all requirements.	Prior to final recordation of any subdivision map	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. MM 4.14-1 incorporated as a condition of approval for any subsequent discretionary action and included as a note on all approved final subdivision maps and approved site plans. C. Prior to recordation of any FTM that includes residential units, the applicant will provide evidence to Kern County Planning Department that it has either dedicated land and/or paid in-lieu fees for parkland dedication to the applicable park districts.			
#244 **4.14-1**	**MM 4.14-2:** Prior to issuance of building permits, the project applicant shall pay all applicable park impact fees.	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to recordation of any FTM that includes residential units, the applicant will provide evidence to Kern County Planning Department that it has either dedicated land and/or paid in-lieu fees for parkland dedication to the applicable park districts.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					

4.15 Transportation and Traffic					
#245 **4.15-1**	**MM 4.15-1:** Concurrent with the application for tentative tract maps, or parcel maps (with the exception of financing maps) or a Commercial Site Development Plan, the project proponent shall submit to the Kern County Roads Department for review and approval a traffic evaluation detailing opening day traffic mitigation measures and all future roadway improvements. Caltrans and Kern County Roads Department shall review the submitted traffic evaluation. Upon review and approval, all mitigation measures shall be incorporated into conditions of approval of site plan reviews and subdivision maps. If the traffic evaluation demonstrates that the identified thresholds are exceeded, no building permits can be issued for the project site until such time as the required roadway improvements have been constructed, or as determined by Caltrans and the Kern County Roads Department. Possible improvements, include for example the reconstruction and realignments of the ramps and their intersections with local roads, realignment of Lebec Road in the vicinity of the interchange and replacement of the over-crossing. Improvements to the interchange ramps including additional ramp lanes and auxiliary lanes may be required if warranted by traffic volumes. The project proponent shall collect the following information and prepare a traffic evaluation study to establish the Level of Service (LOS) at the I-5/Lebec Interchange, Fort Tejon Interchange, and Frazier Mountain Park Road Interchange, including the over-crossing, ramps and intersections with local roads: a. weekday peak hour counts b. intersection turning movement counts c. over-crossing counts d. ramp counts	Concurrent with the application for TTM or parcel map of Site Development Plan	Kern County Planning Department; Kern County Roads Department; Building Inspection Department; California Department of Transportation; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. The applicant shall submit an appropriate traffic study to the Kern County Roads Department for review and approval. C. The Kern County Planning Department will verify with the Kern County Roads Department that all required information has been included within the traffic study prior to issuance of building permits. D. The Kern County Roads Department, in consultation with the California Department of Transportation shall determine whether identified thresholds have been exceeded and roadway improvements are required.			

	All counts shall be classified by vehicle type and percentage total. The traffic evaluation should evaluate any proposed development against the following thresholds identified by the Kern County Roads Department and Caltrans: Lebec Road Interchange a. Lebec Road Overcrossing • AADT shall not exceed 13,000; or • The peak directional volume shall not exceed 600-passenger cars equivalent per hour per lane; or • The average speed of vehicles traveling across the structure shall not fall to 10 mph or below during the peak 15 minutes; or • If vehicle queues form on the structure and interfere with the operation of adjacent intersections. b. Ramps and Ramp Termini • Level of service shall not fall below "C" for any movement at the ramp termini. Delay values established by the Highway Capacity Manual should be utilized as the measurement criteria. Rather than average delay for the entire intersection, delay values shall be evaluated and determined for each of the approach legs of the intersection; or • The length of vehicles queues at the off-ramps shall not exceed the storage capacity of the ramp; or • Vehicles shall not queue back to the deceleration length segment of the ramp as illustrated in the Highway Design Manual, Figure 504.2B; or • At the ramp diverging or merging area, the Level of Service shall not fall below "C". c. Intersections • Queue length from intersections shall not extend into or interfere with the operation of adjacent intersections; or • Level of service for any movement shall not fall below "C".	

	Fort Tejon Interchange a. Ramps and Ramp termini • Level of service shall not fall below "C" for any movement at the ramp termini. Delay values established by the Highway Capacity Manual should be utilized as the measurement criteria. Rather than average delay for the entire intersection, delay values shall be evaluated and determined for each of the approach legs of the intersection; or • The length of vehicles queues at the off-ramps shall not exceed the storage capacity of the ramp; or • Vehicles shall not queue back to the decleration length segment of the ramp as illustrated in the Highway Design Manual, Figure 504.2B; or • At the ramp diverging or merging area, the Level of Service shall not fall below "C". Frazier Mountain Park Road Interchange • Level of service shall not fall below "C" for any movement at the ramp termini. Delay values established by the Highway Capacity Manual should be utilized as the measurement criteria. Rather than average delay for the entire intersection, delay values shall be evaluated and determined for each of the approach legs of the intersection; or • The length of vehicles queues at the off-ramps shall not exceed the storage capacity of the ramp; or • Vehicles shall not queue back to the deceleration length segment of the ramp as illustrated in the Highway Design Manual, Figure 504.2B; or • At the ramp diverging or merging area, the Level of Service shall not fall below "C" or an alternate standard approved by Caltrans.	

#246 **4.15-1**	**MM 4.15-2:** Prior to the approval of the first tentative tract or parcel map that allows construction or the approval of the first Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256, evidence shall be provided to the Kern County Roads Department that the applicant has formally initiated a Project Study Report with Caltrans for the Lebec Interchange.	Prior to the approval of the first tentative tract or parcel map that allows construction or the approval of the first Commercial Site Development Plan Commercial Site Development	Kern County Planning Department; Kern County Building Inspection Department; Kern County Roads Department; ; California Department of Transportation;TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the approval of the first tentative tract or parcel map allowing construction or approval of the first Commercial Site Development Plan, the applicant shall submit evidence to the Kern County Planning and Building Inspection Departments that it has formally initiated a Project Study Report with the California Department of Transportation.			

#247 **4.15-1**	**MM 4.15-3:** Concurrent with the second and all subsequent applications for tentative tract maps, or parcel maps (with the exception of financing maps), or a Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256, the project shall conduct an appropriate traffic study to determine if project traffic volumes exiting the project and traveling southbound on Interstate 5 are consistent with the trip generation assumptions, trip distribution assumption and LOS performance and project traffic volumes identified in the EIR. If the results verify a project-related impact to Southern California segments of Interstate 5, the project shall implement a Transportation Demand Management (TDM) program. The project homeowners association, property owners association, or similar entity shall implement a TDM program, including a carpool program, a van pool program, regional shuttle coordination, a telecommuting center, or a park and ride lot, s appropriate, to reduce the project-related traffic along the southern California segment of the Interstate 5 corridor. Copies of the program, along with annual reports, shall be submitted to Caltrans, Kern County Roads Department, and Kern County Planning Department.	Concurrent with the second and all subsequent applications for tentative tract maps, or parcel maps (with the exception of financing maps), or a Commercial Site Development Plan	Kern County Planning Department; Kern County Roads Department; California Department of Transportation; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Concurrent with the second and subsequent applications for tentative tract maps, or parcel maps (with the exception of financing maps), or a Commercial Site Development Plan, the project applicant shall submit evidence to the Kern County Roads Department and Kern County Planning Department that it has completed a study of traffic on southbound Interstate 5. C. The Kern County Planning Department will verify with the Kern County Roads Department that all required information has been included within the traffic study prior to issuance of building permits. D. If the results verify a project-related impact, prior to [when?] the applicant shall submit evidence to the Kern County Planning Department and Kern County Roads Department that it has implemented a Transportation Demand Management program. E. Copies of the program, along with annual reports, shall be submitted to Caltrans, Kern County Roads Department, and Kern County Planning Department.			

#248 **4.15-1**	**MM 4.15-4:** Prior to the first grading permit, the project shall develop and implement a Construction Traffic Control Plan that will: a. Provide information about project construction activities, including timing and anticipated traffic focal areas, to public transit and emergency service providers, residents, and businesses located in the project vicinity; b. Avoid roadway segments or intersections that are at or exceeding the applicable LOS standards to the extent feasible during the periods of pm AM and PM peak traffic loads; c. Identify an access and circulation plan for use by emergency vehicles in the event that construction-related lane closures or detours occur, including advance notice to local fire and police department to ensure that alternative evacuation and emergency routes are identified to maintain response times; d. Maintain access to existing residences in the area at all times; e. Provide adequate parking for construction workers, trucks, and equipment within the designated project footprint throughout the construction period; f. Restrict construction material deliveries to the extent feasible to between 9:00 a.m. and 3:00 p.m. to avoid peak AM and PM traffic loads; g. Provide traffic controls as required on roadways adjacent to the project, including flag persons with appropriate safety apparel and a Stop/Slow paddle to control oncoming traffic, and construction warning signs that are posted in accordance with local standards or those set forth in the California "Manual on Uniform Traffic Control Devices (latest edition thereof) in advance of an active construction area; h. Provide written notification to contractors regarding appropriate routes to and from the construction site and weight and speed limits applicable to local roadways that access the construction site; and i. Post signs at all active construction areas identifying the name, telephone number, and other pertinent contact information for Kern County staff regarding potential construction traffic issues or concerns.	Prior to issuance of first grading permit	Kern County Planning Department; Kern County Roads Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of a grading permit, the applicant will provide evidence to the Kern County Planning Department and Building Inspection Department that it has developed a Construction Traffic Control Plan according to the specified features.			

#249 **4.15-1**	**MM 4.15-5:** Prior to receiving a building permit from Kern County for any hotel or other permanent onsite facility that will employ more than 100 people, the facility operator shall provide a written report to the Kern County Planning Department regarding the implementation of appropriate measures to reduce employee commuting costs, including, but not limited to, demonstrating that: 1) at least 25% of the facility's permanent work force will be drawn from within a 30-minute commuting radius of the facility; 2) employee housing for at least 25% of the facility workforce is available within or near the project site; 3) employee shuttles, vanpools, carpools, or similar commuting options are available; or 4) public transit to and from the facility is available to at least 25% of the workforce.	Prior to receiving a building permit for any hotel or permanent onsite that will employ more than 100 people	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to receiving a certificate of occupancy, the facility operator shall provide a written report to Kern County Planning and Building Inspection Departments regarding the implementation of appropriate measures to reduce employee commuting costs, including the specified features C. The Kern County Planning Department will verify with the Kern County Roads Department that all required information has been included within the report prior to issuance of building permits.			
#250 **4.15-1**	**MM 4.15-6:** Prior to submittal of approval of any project tentative tract map, parcel map or Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256, that includes a public or private road, the Kern County Planning Department, in consultation with the Kern County Roads Department Engineering and Survey Services, may request that a traffic study or other verification method be completed in accordance with the map approval requirements of Title 18 (Land Division) of the Kern County Ordinance Code to confirm that all public roads included in the map comply with applicable County roadway standards and requirements. The project shall comply with all public roadway-related conditions of approval that may be included in an approved tentative tract or parcel map for the project.	Prior to submittal of approval of any project tentative tract map, parcel map or Commercial Site Development Plan	Kern County Building Inspection Department; Planning Department; Roads Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process.			

		B. Prior to approval of a TTM or parcel map that includes construction or Commercial Site Development permit, Kern County Planning Department, in consultation with the Kern County Roads Department, may request that a traffic study or other verification method be completed in accordance with the map approval requirements of Title 18 (Land Division) of the Kern County Ordinance Code C. Prior to final approval of any project tentative tract map, parcel map that includes construction or Commercial Site Development Plan, that includes a public or private road, the Kern County Planning Department, in consultation with the Kern County Roads Department, may request that a traffic study or other verification method be completed in accordance with the map approval requirements of Title 18 (Land Division) of the Kern County Ordinance Code to confirm that all private roads included in the map comply with applicable County and Tejon Mountain Village Special Plan No. 1, Map 256 roadway standards and requirements			
#251 **4.15-1**	**MM 4.15-7:** All project circulation elements, including onsite public and private roadways and driveways, will be designed and constructed in compliance with the goals, policies and design criteria described in the Tejon Mountain Village Specific Plan and the Tejon Mountain Village Special Plan No. 1, Map 256.	Prior to approval of street improvement plans	Kern County Engineering Survey Services Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans, Kern County Building Inspection Department will verify that all project circulation elements, including onsite public and private roadways and driveways, will be designed and constructed in compliance with the goals, policies, and design criteria described in the Tejon Mountain Village Specific Plan and the Tejon Mountain Village Special Plan No. 1, Map 256			

#252 **4.15-1**	**MM 4.15-8:** The project shall implement the emergency access design requirements set forth in the Tejon Mountain Village Specific Plan, the Tejon Mountain Village Master Design Guidelines, the Tejon Mountain Village Special Plan No. 1, Map 256, and the Tejon Mountain Village Specific Plan Evacuation Plan.	Prior to street improvement plan approval	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of street improvement plans, the applicant will provide evidence to Kern County Planning and Building Inspection Departments that it has implemented the emergency access design requirements set forth in Tejon Mountain Village Specific Plan, the Tejon Mountain Village Master Design Guidelines, the Tejon Mountain Village Special Plan No. 1, Map 256, and the Tejon Mountain Village Specific Plan Evacuation Plan			
#253 **4.15-1**	**MM 4.15-9:** The project shall provide sufficient parking for commercial, recreational, and multi-family land uses as required by the applicable provisions of the Kern County Zoning Code, the Tejon Mountain Village Special Plan No. 1, Map 256, and the custom lot parking requirements identified in the Tejon Mountain Village Master Design Guidelines.	Prior to issuance of building plans	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to issuance of building permits, Kern County Building Inspection Department will verify that the project has provided sufficient parking for commercial, recreational, and multi-family land uses as required by the applicable provisions of the Kern County Zoning Code, the Tejon Mountain Village Special Plan No. 1, Map 256, and the custom lot parking requirements identified in the Tejon Mountain Village Master Design Guidelines			

#254 **4.15-2**	**MM 4.15-10: (Payment of Supplemental Road Improvements)**: Prior to the recordation of the first tract map or parcel map, or the approval of the first Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256, the applicant shall provide to the County a written statement of intent, which will detail the approach used to satisfy obligations for supplemental road improvements detailed in the Mitigation Measure 4.15-1. The applicant may request that the statement of intent be amended to reflect future conditions, including the potential fair share allocation of costs associated with other transportation and traffic mitigation measures in this EIR prior to the recordation of any subsequent tract map or parcel map, or approval of a subsequent Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256. The initial written statement of intent and method proposed, and any subsequent amendments that may be requested by the applicant, will be approved by the Kern County Roads Department. The applicant shall have four approaches to fulfill the road improvement responsibilities: a. Lump Sum Payment: Any lump sum payment shall be made prior to the recordation of a tract map or parcel map, or approval of a Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256 that generates an impact. All monies shall be paid to the Kern County Roads Department. At the time the applicant elects to pay, the Kern County Roads Department shall conduct a review of the distributed share amount and make adjustments, if required, based on increases to the construction cost index, other changes in standards or technology for required signalization or improvements, or updated development project proposals. Final determination of the supplemental projects and amounts of the supplement funding will be based on the final approval of the Tejon Mountain Village Specific Plan designation and zoning.	Prior to recordation of the first tract map or parcel map	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the recordation of the first tract map or parcel map with construction, the applicant will submit a written statement of intent to Kern County Engineering &Survey Services Department which will detail the approach used to satisfy obligations for supplemental road improvements detailed in transportation and traffic Mitigation Measures 4.15-11 and 4.15-1. C. Prior to issuance of certificates of occupancy and after determination of fair share lump sum, Kern County Roads Department shall provide approved cost allocation on a per house basis to Kern County Building Inspection Department.			

	The Kern County Roads Department may request, at a cost to be borne by the applicant, a supplemental traffic analysis to determine the current lump sum payment. b. Construction of Road Improvements: If, in an approved summary of intent, the applicant seeks to construct road improvements in lieu of a lump sum payment, the improvements shall be constructed and accepted by the County prior to issuance of the Certificate of Occupancy for the related building permits. Deviations from this sequence of events may be approved by the Kern County Roads Department. c. Combination of Approach A and Approach B: The applicant may choose to provide construction for certain roadway improvements and payment for other improvements. This approach must be determined in consultation with the Kern County Roads Department. All monies designed for roadway improvements shall be paid prior to the recordation of a tract map or parcel map, or approval of a Commercial Site Development Plan, as defined in the Tejon Mountain Village Special Plan No. 1, Map 256 that generates an impact as detailed in transportation and traffic Mitigation Measures 4.15-11 and 4.15-12. d. After determination of fair share lump sum, the cost may be allocated on a per house basis payable prior to the issuance of applicable Certificates of Occupancy. This method requires prior approval of the Kern County Roads Department.	
Justification: The impacts to cumulative traffic and circulation conditions described under Impact 4.15-2 are considered significant and unavoidable. All feasible and reasonable changes or alterations have been required in, or incorporated into, the project that substantially lessens the potentially significant effect as identified in the Final EIR.		

4.16 Utilities					
#255 **4.16-1**	**MM 4.16-1:** The project shall implement Tejon Mountain Village Specific Plan Policy 30, which requires implementation of a water-wise program that will include all feasible measures to reduce water use and will establish a Maximum Applied Water Allowance (MAWA) budget for each lot or home.	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee; Tejon Castac Water District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of building permits, the applicant will provide Kern County Building Inspection Department with evidence that it has complied with the MAWA established for the lot.			
#256 **4.16-1**	**MM 4.16-2:** The project shall implement Section IV of the Sustainability Plan (Appendix F of Appendix B-1), which identifies water conservation measures applicable to the project, including the following: a. Each developer, builder, or custom lot owner shall implement water efficiency measures and techniques and shall incorporate landscape design and conservation measures that are most practical for a particular development project to demonstrate that the project will not use water in excess of its Maximum Applied Water Allowance; b. Water and energy use reduction measures, such as those	Prior to issuance of building permits	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee; Tejon Castac Water District		

	pertaining to interior fixtures, tankless water heaters, and low-flow plumbing, shall be used to meet the required Maximum Applied Water Allowance for each land use; and c. All project landscaping shall meet the design criteria and specifications for plant materials, turf and mulch, irrigation systems, soil management, water features, and grading design described in Section IV of the Sustainability Plan and in the Tejon Mountain Village Specific Plan Master Design Guidelines.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to issuance of building permits, the applicant will provide Kern County Building Inspection Department with evidence that it has complied with water conservation requirements outlined in Section IV of the Sustainability Plan. C. Kern County Planning Department will verify the approved efficiency measures.			
#257 **4.16-1**	**MM 4.16.3:** Prior to approval of each tentative tract map or development of any commercial site, the applicant shall verify that sufficient water storage capacity exists or will be constructed as may be required to assure that at least a 3-day emergency period water consumption supply and a local fire suppression supply in compliance with applicable fire code provisions will be available onsite to serve all occupied structures. If any construction or other work is proposed within the Department of Water Resources (DWR) an encroachment permit must be obtained from DWR prior to beginning work.	Prior to approval of TTM or Commercial Site Development permit	Kern County Planning Department; Kern County Building Inspection Department; TMV Master Developer/Master Property Owners Association; TMV Design Review and Approval Committee; Tejon Castac Water District		

		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval C. Prior to approval of each tentative tract map or Commercial Site Development permit, the applicant shall provide evidence to Kern County Building Inspection Department that TCWD (1) has sufficient water storage capacity that it will be constructed as may be required to assure that at least a 3-day emergency period water consumption supply; and (2) that the a local fire suppression supply in compliance with applicable fire code provisions will be available onsite to serve all occupied structures.			
#258 **4.16-1**	**MM 4.16-4:** Prior to approval of each tentative tract map or development of any commercial site, the applicant shall provide a will-serve letter for water service from the Tejon Castac Water District.	Prior to approval of each tentative tract map or Commercial Site Development permit	Kern County Planning Department; Kern County Building Inspection Department; Tejon Castac Water District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to approval of a TTM or Commercial Site Development permit, applicant will provide a will-serve letter to the Kern County Building Inspection Department for water service from the Tejon Castac Water District. C. Kern County Planning Department will verify prior to final subdivision map recordation or issuance of building permits for commercial construction.			

#259 **4.16-1**	**MM 4.16-5:** Prior to issuance of any building permit for residential housing, written verification shall be provided from the Tejon Castac Water District that a 7-year indoor water supply for the number of dwelling units that have been constructed or for which building permits have been issued is reserved in the water banks for the Tejon Mountain Village Specific Plan project is established. No building permits shall be issued without the applicable reserve amount being available exclusively for the Tejon Mountain Village Specific Plan area.	Prior to issuance of any building permit for residential housing	Kern County Building Inspection Department; Tejon Castac Water District; Kern County Planning Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to Prior to the issuance of a residential building permit, applicant will provide evidence that TCWD has a 7-year indoor water supply for the number of dwelling units that have been constructed or for which building permits have been issued is reserved in the water banks. C. Kern County Planning Department will verify prior to issuance of any building permit for residential housing.			

#260 **4.16-2**	**MM 4.16-6:** Prior to issuance of building permits for the first residence or for commercial development, the applicant shall provide written verification of an agreement with the Tejon Castac Water District for the method of alternative disposal or handling of the project generated biosolids.	Prior to issuance of the first residential or commercial building permits	Kern County Building Inspection Department; Kern County Planning Department; Tejon Castac Water District; Kern County Environmental Health Services Department		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuance of building permits for the first residence or for commercial development, the applicant shall provide written verification of an agreement with the Tejon Castac Water District for the method of alternative disposal or handling of the project generated biosolids D. The applicant will submit to the Kern County Environmental Health Services Department for review and approval documentation showing the method of alternative disposal of project generated biosolids. E. Kern County Planning Department will verify prior to issuing the first residential or commercial building permits.			

#261 **4.16-3**	**MM 4.16-7:** Prior to approval of each tentative tract map or development of any commercial site, the applicant shall provide a will-serve letter for sewer service from the Tejon Castac Water District. The will serve letter shall indicate the project will connect to public sewer and/or utilize a Septic Tank Effluent Pumping (STEP) System that does not utilize leach fields.	Prior to approval of each tentative tract map or Commercial Site Development permit	Kern County Planning Department; Kern County Building Inspection Department; Tejon Castac Water District		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to approval of a TTM or Commercial Site Development permit, applicant will provide to Kern County Building Inspection Department a will-serve letter for water service from the Tejon Castac Water District			
#262 **4.16-5**	**MM 4.16-8:** During construction, demolition debris and construction wastes shall be recycled to the extent feasible. The applicant shall submit a Construction/ Demolition Recycling Plan to the Kern County Waste Management Department for review and approval. An onsite recycling coordinator shall be designated by the project applicant to facilitate recycling of all construction waste through coordination with the onsite contractor, local waste haulers, and/or other faculties that recycle construction/demolition wastes. The onsite recycling coordinator will also be responsible	Prior to issuing grading permits	Kern County Planning Department; Kern County Building Inspection Department; Kern County Planning Department; Waste Management Department; TMV Design Review and Approval Committee		

	for ensuring that wastes requiring special disposal are handled according to state and County regulations that are in effect at the time of disposal. The name and phone number of the coordinator and the site plan for the disposal area shall be provided to the Waste Management Department prior to the issuance of a grading permit.	**Steps to Compliance:** A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. The applicant will submit a Construction/Demolition Recycling Plan to the Kern County Waste Management Department for review and approval. D. Kern County Planning Department will verify approval prior to issuance of building and grading permits. E. Kern County Engineering Survey Services Department will verify compliance in the field prior to final occupancy.

#263 **4.16-5**	**MM 4.16-9:** The project shall implement Section 3.3 of the Sustainability Plan (Appendix F of Appendix B-1), which identifies construction waste-reduction measures applicable to the project, including a. Selecting materials to reduce construction waste (Section 3.3.1), and b. Reducing construction waste (Section 3.3.2) by implementing measures that include i. Requiring builders, developers, and custom lot owners to recycle construction waste, including waste and unused materials generated during the construction and building process, and existing waste and unused materials on site prior to construction. Recycling options may include the use of onsite spoils and bulk site-clearing materials for existing project needs, such as backfill, mulch, erosion and sedimentation control, the donation of materials to charitable organizations, or the export of materials for use in other local construction projects; ii. Maintaining a centralized information repository on site to identify which construction materials can be recycled and provide direction as to which sources will accept recyclable building and construction materials; and iii. Hauling building or construction materials that are not recyclable off site to the nearest waste disposal facility rather than transporting such materials farther from the project site and thereby generating increased emissions from waste transportation.	Prior to issuing residential or commercial building permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuing building permits, the applicant the applicant will submit evidence to Kern County Planning and Building Inspection Departments that the applicant has required builders, developers and custom lot owners to implement measures to reduce construction waste.			

#264 **4.16-5**	**MM 4.16-10:** The project shall implement, to the extent feasible, the applicable waste-diversion and recycling measures identified by the Kern County Waste Management's Department and the Sustainability Plan to reduce the project's long-term solid waste generation. In addition, the project shall provide funding on a fair-share basis to defray the costs incurred by the Kern County Waste Management Department (KCWMD) in constructing a trans-load facility designed to offset increased waste demand at the Lebec Transfer Facility. The project's fair-share costs are estimated to be $560,407 based on the Nexus study provided by KCWMD. Prior to the issuance of any building permit, for the following land use development units, the project proponent shall pay the following project fair share costs (commercial support facilities are excluded): Land Use Development Unit a. Residential Unit $129 per dwelling unit. b. Commercial $129 per 1,000 square feet of commercial development. c. Hotel $129 per room. Required fees are subject to the most current Consumer Price Index (CPI) as determined by the County Administrative Office. Prior to the issuance of the building permit for the 501st land use development unit, and at such time that KCWMD has indicated in writing that the Department has the remaining funds and necessary land use approval to construct the trans-load facility, the project proponent shall pay the remaining $495,907. If at the building permit for the 501st land use development unit or thereafter, KCWMD does not have the necessary funds and or land use approval in place for construction of the trans-load facility, the County will continue to collect fair share costs at the building permit stage. The project proponent will not be required to pay any remaining fees until such time as indicated by the KCWMD. Once KCWMD has indicated in writing that the remaining fees are due and the amount, no building permits shall be issued for the project until the requested fees are paid in full.	Prior to issuance of residential and commercial building permits	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuing building permits, the applicant the applicant will submit evidence to Kern County Planning and Building Inspection Departments that the applicant has required owners to implement applicable waste-diversion and recycling measures identified by the Kern County Waste Management Department and the Sustainability Plan.			

	Upon payment of the $495,907 (or remaining fees as indicated by KCWMD), the County will continue to collect the required fair share costs and shall reimburse the project proponent annually for any trans-load facility payments collected during the course of the year, until such time as the project has been completely built. If these improvements are not implemented, upon mutual agreement of the County and the Developer, fees can be used for recycling programs or other waste reduction measures.				
#265 **4.16-5**	**MM 4.16-11:** Prior to the recordation of the first tract or parcel map for division of the proposed project site, the owner of the project site shall coordinate with Kern County and impose universal trash collection on all residential and commercial development. The owner further shall agree to vote for or waive his protest rights connected with the imposition of such trash collection fees or assessments. It is a goal that this development will have bulky item collection, curbside green waste collection, and curbside recycling collection when feasible.	Prior to the recordation of the first tract or parcel map that includes construction	Kern County Planning Department; Kern County Building Inspection Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Prior to the recordation of the first tract or parcel map that includes construction, the applicant will provide evidence to Kern County Building Inspection Department that it will impose universal trash collection for all residential and commercial development and will provide evidence to Kern County waiving protest rights connected to the imposition of such trash collection fees or assessments.			

#266 **4.16-5**	**MM 4.16-12:** Prior to the first certificate of occupancy for any multifamily unit, the applicant shall construct, subject to the review and approval of the Kern County Waste Management Department, adequate, segregated, onsite screened storage for the collection of multifamily residential waste and recyclable materials. The area shall be distinct and in addition to any requirements for the commercial development. The area shall be designed to be architecturally compatible with the development and shall not prevent security of the recyclables. Recycling area bins or containers must provide protection against adverse environmental conditions, such as rain or snow, which might render the collected materials unmarketable. Driveways and/or travel aisles shall, at a minimum, provide unobstructed access for collection vehicles and personnel. A sign clearly identifying all recycling/solid waste collection and loading areas and the materials accepted shall be posted adjacent to all points of direct access to the area.	Prior to the first certificate of occupancy for any multifamily unit	Kern County Department of Building Inspection; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to the first certificate of occupancy for any multifamily unit , the applicant will provide evidence that Kern County Waste Management has approved the required storage and collection area			
#267 **4.16-5**	**MM 4.16-13:** Prior to the first certificate of occupancy for any commercial development, the applicant shall construct, subject to the review and approval of the Kern County Waste Management Department, adequate, segregated, onsite screened storage for collection of commercial waste and recyclable materials. The area shall be designed to be architecturally compatible with the development and shall not prevent security of the recyclables. Recycling areas of the bins or containers must provide protection against adverse environmental conditions, such as rain or snow, which might render the collected materials unmarketable. Driveways and/or travel aisles shall, at a minimum, provide unobstructed access for collection vehicles and personnel. A sign clearly identifying all recycling/solid waste collection and loading areas and the materials accepted shall be posted adjacent to all points of direct access to the area.	Prior to the first certificate of occupancy for any commercial development.	Kern County Planning Department; Kern County Department of Building Inspection; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to the first certificate of occupancy for any commercial development the applicant will provide evidence that Kern County Waste Management has approved the required storage and collection area			

#268 **4.16-7**	**MM 4.16-14:** The project shall implement Section 3.2 of the Sustainability Plan (Appendix F of Appendix B-1), which identifies energy efficiency and conservation measures, including a. Requiring all development on the project site to exceed the California Air Resources Board AB 32 Scoping Plan Base Year (2008) Title 24 energy requirements by at least 25% (Title 24, Part 6, of the California Code of Regulations, effective October 1, 2005); b. Requiring active solar energy systems in all community amenity buildings and all private or community pools; c. Requiring project buildings and homes to be sited, oriented, and designed to optimize conditions for natural heating, cooling, and day lighting to the maximum extent practicable; and d. Encouraging the development of public financing methods for project homeowners to finance the cost of installing photovoltaic systems or other energy-conservation improvements over time.	Prior to issuing certificates of occupancy	Kern County Building Inspection Department; Kern County Planning Department; TMV Design Review and Approval Committee		
		Steps to Compliance: A. This measure shall be included as a condition of approval on Special Plan #1, Map 256, and all subsequent modifications, and will be implemented through the special plan and site development review process. B. Kern County Planning Department will verify the note prior to approval. C. Prior to issuing certificates of occupancy, the applicant will submit evidence to Kern County Building Inspection that it has required all builders, developers and custom lot owners to comply with the energy efficiency conservation measures included in the Sustainability Plan.			
Justification: Changes or alterations have been required in, or incorporated into the project that substantially lessen the potentially significant effect as identified in the Final EIR, so that environmental effects after such mitigation are reduced to a less-than-significant level.					